Issued September 13, 1915.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE
ANDREW M. SOULE, PRESIDENT; DAVID D. LONG, IN CHARGE SOIL SURVEY

SOIL SURVEY OF TERRELL COUNTY, GEORGIA.

BY

DAVID D. LONG, OF THE GEORGIA STATE COLLEGE OF AGRICULTURE, AND MARK BALDWIN, OF THE U. S. DEPARTMENT OF AGRICULTURE.

HUGH H. BENNETT, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1914.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE,
1915.

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LETTER OF TRANSMITTAL.

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., March 18, 1915.

SIR: Under the cooperative agreement with the Georgia State College of Agriculture a soil survey of Terrell County was carried to completion during the field season of 1914.

I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1914, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

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Soil map, Terrell County sheet, Georgia.

SOIL SURVEY OF TERRELL COUNTY, GEORGIA.

By DAVID D. LONG, of the Georgia State College of Agriculture, and MARK BALDWIN, of the U. S. Department of Agriculture.

DESCRIPTION OF THE AREA.

Terrell County, Ga., lies in the southwestern part of the State. It occupies a central geographical position in relation to the surrounding counties which together form the district known as Southwest Georgia. The southern boundary of the county is approximately 62 miles north of the Georgia-Florida line, and the Alabama line lies about 32 miles west of the western boundary. Webster and Sumter Counties adjoin on the north; Lee County on the east; Dougherty and Calhoun on the south; and Randolph on the west. The Kinchafoonee River forms the boundary of the northeastern corner of the county and separates in part Terrell from Sumter and Lee Counties, while Ichawaynochaway Creek, in the southwestern part, forms part of the boundary between Randolph and Terrell. These are the only portions of the county line which are formed by natural features. The area of the county is 334 square miles, or 213,760 acres.

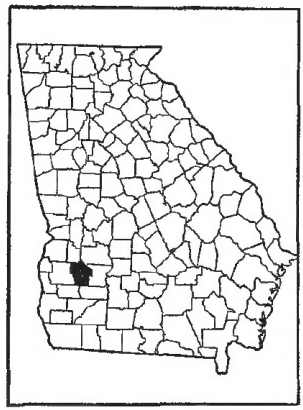

FIG. 1.—Sketch map showing location of the Terrel County area, Georgia.

The topography of the county ranges from level to rolling. The county lies in the Dougherty Plain, a prominent topographic feature of southwestern Georgia.[1] It is described as consisting of very level tracts with few elevations that may be termed hills. It lies from about 300 to 500 feet above sea level. The elevation of Dawson is 352 feet, Graves Station 350 feet, and Parrott 485 feet. The roughest part of the county lies west of Graves Station and Parrott Road, where Ichawaynochaway Creek and its tributaries have thoroughly dissected the country. The north-central part of the county has been made somewhat rolling, but not hilly, by the dissection of the streams draining it. The strongest relief is found along

[1] Veatch. Geology of the Coastal Plain of Georgia.

the headwaters of Mossy Creek and in the vicinity east of Parrott. River terraces lie in the valley of the Kinchafoonee River and Ichawaynochaway Creek.

In general a considerable part of the alluvial lands is poorly drained. The river valleys are bordered as a rule by gentle slopes. The watershed ridges consist of wide, level, and smooth, plainlike areas, which may extend for several miles without interruption except by lime-sink depressions. Thousands of acres may be selected in one tract which would contain little or no uneven or broken slopes. The county ranks among the first in the State in the proportion of arable land which it contains.

A conspicuous feature of the general topography consists of the numerous sink holes which form gentle depressions in the otherwise level lands. They are more numerous in the areas of flat topography, especially in the southern part of the county. They are of various shapes and range in size from an acre to as much as several hundred acres. These depressions are the result of the solution of the underlying limestone and consequent subsidence of the land surface. During periods of heavy rainfall many of these contain water which remains until it passes off through underground channels or is evaporated. Sometimes a series of these ponds connect to form the head of a stream.

The drainage waters of the county ultimately flow into the Flint River, the Kinchafoonee River and Ichawaynochaway Creek being the chief tributaries by which the water is carried. The former drains the northeastern part of the county, while the latter drains practically the western half. Chickasawhachee Creek with its various branches drains the greater part of the south-central portion.

Other less prominent streams of the county are Kiokee, Cheenubba, Turkey, Pine Head, Mossy, and Middle Creeks. Owing to the formation which underlies the county there are relatively few surface streams, as the greater part of the rainfall passes to subterranean channels. In the southern part of the county the small branches are fed by springs and underground streams and have a large volume for their comparative length.

At the present time nearly all of the well-drained uplands is cleared and tilled. There are very few areas of woodland of any considerable size. The original timber consisted of longleaf yellow pine on the gray sandy soils, and hickory, oak, shortleaf yellow pine, and a small amount of longleaf pine on the red soils. Along the watercourses or in swamps are found white oak, swamp maple, sycamore, ash, tulip poplar, cypress, gum, bay, and magnolia, with

an undergrowth of water-loving shrubs. Water oak and live oak, with some gum and cypress, are found in the sink-hole basins.

Terrell County was originally settled by emigrants from other or older parts of the State, who came into this region to acquire new land. About 1835–1837 the land was surveyed into lots, which were granted to settlers by the State government. At this time the county was a part of Lee and Randolph Counties. In 1856 it was created a separate political unit.

The county is fairly well settled for this section of the State. In the southern and eastern parts, on the large plantations, the population consists mainly of negroes. In other parts is found a larger percentage of white people. Between Dawson and Parrott, especially in the vicinity of Yoemans, the proportion of white farmers is greatest, and this is one of the best developed rural districts in the southern part of the State. According to the census of 1910 the population of the county is 22,003; in 1900 it was 19,023.

Dawson is the county seat. In 1910 it contained 3,827 people and in 1900, 2,926. The town is the business center of the county. It has such municipal improvements as a lighting system, water works, fire department, and excellent public schools. Several manufactories are also located here. Bronwood, with a population of 465, is a growing town and trading point in the eastern part of the county. Parrott is another important town. It is located in the northwestern part of the county and affords a good point of trade for a large surrounding section of that part of the county. Its population is 360. Sasser, in the southeastern part, has a population of 441. It is a trading point for the southeastern section. Other towns and trading points of the county are Graves Station, Yoemans, Herod, and Doverel.

Two lines of railway traverse the county and intersect at Dawson. The Columbus and Albany division of the Seaboard Air Line crosses the county from northwest to southeast, passing through Parrott, Yoemans, and Sasser. The Central of Georgia passes through the county in a generally southwest and northeast direction, touching Bronwood and Graves Station. These roads afford passenger and freight service.

The markets of the county are chiefly the towns within its limits. Ultimately the products reach Dawson and then other larger markets, as Albany, Macon, Atlanta, and Savannah.

An excellent public-road system reaches all parts of the county. The roads are well built, use being made of the sand and clay occurring in the county.

CLIMATE.

The climatic conditions of Terrell County may be described as warm and relatively moist, the mean temperature for the year being 65.1° F. The summers are usually long, beginning practically in April and extending to the latter part of October, while the winters are short and mild, with periods of continued low temperatures of rare occurrence. The hottest months of the year are July and August, which have a mean temperature of 80° F. The hottest day for a period of 16 years was 104° F., recorded at the station at Morgan. For the winter months the mean temperature is 48.9°. Frosts occur frequently, and ice may form in thin sheets several times during the winter. It is rare for temperatures much below freezing to prevail. During a period of 16 years the lowest temperature recorded was 10° F., which occurred in February, while the highest for winter was 83° F., which also occurred in February. Periods of cold weather usually follow rain and may continue for several days. Snow rarely falls and sleet is also uncommon. The coldest spells of winter rarely injure violets, japonicas, and other hardy flowers, while the hardy vegetables, if given some protection during the coldest periods, can be grown during the winter months.

The average rainfall for the year is 52.17 inches. In the driest year it was 35.57 inches, and for the wettest year it was 62.9 inches. The rainfall is well distributed, the greater part falling during the growing season and the least during the fall, during harvest time, when least rainfall is required. Rainfall for January, February, and March is high, which emphasizes the need of cover crops on the land to prevent erosion. In the wettest years most of the rain falls in May, June, and July.

The average growing season extends from the average date of the last killing frost in spring, March 16, to the average date of the first killing frost in the fall, which is November 6, and thus has a duration 7 months and 21 days. The latest recorded date of killing frost in spring is April 15, and the earliest in the fall October 15.

The following table shows the normal monthly, seasonal, and annual temperature and precipitation recorded at Morgan, Calhoun County, which is located somewhat south of Terrell County. The records cover a period of 16 years.

Normal monthly, seasonal, and annual temperature and precipitation at Morgan.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	49.3	80	10	4.06	3.92	3.88
January	48.2	80	13	4.34	5.23	8.61
February	49.2	83	10	6.44	4.32	3.47
Winter	48.9			14.84	13.47	15.96
March	59.4	87	20	5.66	3.82	4.38
April	64.2	92	31	3.52	1.74	0.59
May	73.0	98	41	3.35	1.61	9.27
Spring	65.5			12.53	7.17	14.24
June	78.5	102	51	4.38	2.11	8.66
July	80.3	104	60	5.31	3.73	9.88
August	80.1	100	58	6.41	4.42	4.63
Summer	79.6			16.10	10.26	23.17
September	76.6	100	41	3.40	0.87	2.96
October	65.8	94	26	2.29	Trace.	5.19
November	56.1	86	20	3.01	3.80	1.38
Fall	66.2			8.70	4.67	9.53
Year	65.1	104	10	52.17	35.57	62.90

AGRICULTURE.

To-day Terrell is one of the foremost counties of south Georgia in its agricultural development. It ranks well in regard to the production of cotton and other crops. The natural fertility of the soil, combined with the efforts of an unusually large proportion of good farmers, have placed it in this enviable position.

The county's progress in agriculture can be divided into three periods, viz, the early settlement period, the reconstruction period, and the present. In the early period of the county's development the farmers produced a wide range of crops, including those which insured self-maintenance. Corn, wheat, oats, rye, and barley were grown, and the raising of cattle, hogs, and sheep, which were allowed to run at large in the woods, was an important industry.

This system of agriculture was superseded by the one-crop cotton system during the reconstruction period following the Civil War. The demand for cotton the world over made that crop as good as cash and the impoverished condition of the people immediately after the war made a cash crop an especially attractive one. This condition continued until recently.

At the present time the general tendency, at least in the crops grown, is toward the condition found in the earliest development of the county, when sufficient crops were produced and plenty of cattle raised to supply the needs of the people. This aim has not been realized as yet, but the varied soils and the favorable climatic conditions make a wide range of crops possible. The chief crops grown at the present time are cotton, corn, oats, peas, peanuts, sugar cane, hay, peaches, and pecans, with some wheat and rye, besides many vegetables produced for home consumption.

Cotton.

To cotton is devoted the largest acreage, 42 per cent of the improved land of the county being utilized in its production. According to the census figures, the acreage has increased rapidly during the last 35 years. In 1879 there were 25,740 acres in this crop, and in 1909, 75,125, or an increase of 49,385 acres. The production showed a correspondingly large increase, being 35,985 bales, against 29,041 bales in 1879. According to estimates based on ginners' reports, the production for 1913 was 38,614 bales, which represents an increase of 5,254 bales over 1912. The average yield per acre, as computed from the United States census figures, was 0.27 bale in 1879, 0.36 bale in 1889, 0.42 bale in 1899, and 0.48 bale in 1909. The latter is one of the highest county averages in the State.

Cotton is grown on all the upland soils in the county, with varying degrees of success. The high yields seem usually to be obtained on the Tifton sandy loam and on the Norfolk sandy loam. On these soils the crop apparently withstands drought better than on the red soils of the Greenville and Orangeburg series. The stalks grow larger on the Norfolk and Tifton sandy loams, but the first open bolls in the fall are found on the red soils. Sandy soils, such as the Greenville loamy sand, Norfolk sand, Ruston sand, and Orangeburg sand, produce, as a rule, small stalks with few bolls.

Preparations for the crop begin by breaking the land in January or February, although it is recognized by the best farmers that the best time for this work is in November or December, especially on the heavy soils. The land is broken broadcast or "flat" by 75 to 90 per cent of the farmers. A two-horse steel plow is most commonly used, though this plow is a comparatively recent introduction and is not yet in as general use as it should be. In February the land is marked off into rows and a furrow is then opened with a one-horse plow. The rows are laid off from 3 to 5 feet apart, the usual distance being 3½ to 4 feet. On the sandy soils the rows are closer together than on the most productive and well-fertilized soils. Into the furrow above mentioned is placed either a part or

the entire amount of fertilizer to be applied. A bed is turned over the fertilizer, upon which the seed is planted. Sometimes it is rebedded so as to keep the soil in a pulverulent condition. The time of planting cotton varies, but the greater part of the crop is planted between March 15 and 25.

Cultivation of the crop begins by running a furrow through the "middles" and by "barring off" the crop as soon as the plants are well above ground. The "barring-off" process consists of running close to the young plants with a small plow, turning the soil toward the middle of the rows, and leaving the cotton on a narrow ridge. This is done to cover the grass, to keep the soil loose, and to facilitate the chopping out of the cotton. The chopping is done by hand with hoes. The distances left between the plants varies from 1 foot to 3 feet, the usual distance being 18 to 24 inches. Subsequent cultivations follow with sweeps and scrapes, the number varying from 4 to 8. Some farmers think it profitable to continue cultivation as long as possible, even advocating as many as 10 or 12 cultivations. The cultivation should be frequent and shallow in order to keep a crust from forming on the surface of the soil. The diverse harrow has been found a good implement to use in place of "barring off." Cultivation is usually discontinued about the middle of July.

Commercial fertilizers are universally used for cotton. In parts of the county, where the holdings are large and where most of the land is rented to negroes, the mixtures are 8–2–2 or 8–2–3 "goods," and the quantity applied ranges from 200 to 300 pounds per acre. On the better farms the quantity and quality vary considerably. The quantities applied range from 200 to 700 pounds, and in rare cases to as much as 1,000 pounds per acre. The prevailing application is 400 or 500 pounds, made in two applications, the first under the seed and the second about May, as a side dressing. Fertilizers carrying from 8 to 10 per cent phosphoric acid, 2 or 3 per cent nitrogen, and 2 to 6 per cent of potash are used. Very few farmers use grades carrying less than 9 per cent of phosphoric acid, 2 per cent of nitrogen, and 4 per cent of potash. The second application is commonly a mixture with less phosphoric acid and more nitrogen and potash—usually the formula is 4–7–5.

The Toole variety of cotton is used almost exclusively. It has been found well suited to the conditions of the county. Cleveland, Cook's Improved, and King varieties are also planted. Wilt-resistant varieties are being introduced.

Corn.

The corn crop of the county is second to cotton in importance. According to the census reports, there were 21,719 acres devoted to this crop in 1879, with a production of 137,882 bushels, or an average

yield of 6.3 bushels per acre; 26,915 acres in 1889, producing 257,744 bushels, or 9.5 bushels per acre; 39,463 acres in 1899, producing 381,870 bushels, or 9.6 bushels per acre; and 36,714 acres in 1909, with a production of 451,037 bushels, or 12.3 bushels per acre. It will be noted that while there was a decrease in acreage in 1909 as compared with 1889, the production was considerably larger. The tenant system of farming is responsible for the low average yield, as on the best farms 25 to 50 bushels per acre is frequently obtained. The highest yields are secured on deep sandy soils having a clay subsoil. On the heavy Greenville or Orangeburg soils the yield is not so large as on these types; the crop is more susceptible to injury by drought.

Where the best yields of corn are obtained the land is prepared in a similar manner as for cotton. Sometimes after the beds are made a harrow is run over them. The rows are laid off from 4 to 6 feet apart, while the hills are placed from 2 to 3 feet apart in the row. As a general rule, on the best land there is a larger number of stalks to the acre. Some fields are laid off with wide rows in order to plant cowpeas between the corn rows. Corn is given only three or four cultivations. The crop is "laid by" about July.

During August the blades are pulled and cured for forage, and in some cases the upper parts of the stalks are cut for the same purpose. The corn is gathered during October and November.

The corn crop is not fertilized as heavily as cotton. Often no fertilizer at all is applied, while in other cases there is an application of 100 to 200 pounds of a low-grade mixture. Cotton seed is sometimes applied in the rows as a fertilizer, and at times a small amount of stable manure is scattered in the drill. High-grade fertilizers are occasionally used, however, by the better farmers.

The Knighton is a common variety, although it has become badly mixed with other varieties. Other varieties are becoming more popular, among which may be mentioned the Hastings Prolific. In general little attention is paid to the selection of varieties in the case of corn.

Oats.

Census returns show that between 1880 and 1910 the acreage of oats decreased considerably and that the production and yield per acre increased. In 1879 there were 6,210 acres in this crop, with a yield of 42,830 bushels, or an average acreage yield of less than 7 bushels, while in 1909 there were 2,814 acres and 58,378 bushels, making the average yield per acre about 20.7 bushels. A considerably larger acreage was in oats in 1914 than in 1909. It now forms one of the most important crops of the county and is gradually increasing in importance. This is the result of the tendency to greater diversifica-

tion of crops and the ruling high price of feed. More feed can be produced per acre by growing oats and following the crop with cowpeas than can be obtained from growing corn. It is found that large yields of oats can be produced on all the well-drained soils of the county, but the deep sandy soils are the least productive of this crop. The average yields on the best farms range from 20 to 60 bushels per acre, the higher figure being obtained only under the most favorable conditions.

The prevailing method of preparing a seed bed is to plow the land broadcast and smooth it by harrowing several times or until the soil is in good tilth. The seed is drilled in with a grain drill, the fertilizer being applied at the same time. A less common method is to open deep furrows about 18 to 24 inches apart in the prepared land and then plant the seed and distribute the fertilizers in this furrow. The land is then harrowed to cover the seed. This method is more expensive, as the seed and fertilizer are dropped by hand. This open-furrow method is used in some cases by running furrows between the cotton rows. After the cotton is picked the stalks are cut and the oat crop sometimes cultivated. A less desirable method of seeding the crop is to broadcast the seed and cover it with the plow. The land may also be harrowed and smoothed after plowing. Poor results usually attend this method.

It is most desirable to seed oats in September or October, but in many cases seeding is delayed until November or December by unfavorable climatic conditions. A small acreage is sowed in March.

The oat crop is utilized chiefly for the grain. It is harvested about June with the mower or reaper. Sometimes a part of the crop is cut early in spring for hay. Most of the crop is thrashed.

Fertilizers are not used so much as for other crops. The same grades are used as for corn or cotton, applications varying from 200 to 300 pounds per acre. A top dressing of 100 pounds or more of nitrate of soda or sulphate of ammonia is given to the crop in the early spring. This is of especial benefit when the plants are yellowish green.

The Bancroft variety of oats is almost exclusively used in the county. There are grown also the Appler and Texas Rustproof varieties. Fulghum has been introduced recently and promises to take the leading place, providing unforeseen deficiencies do not develop. It is an early variety and can be harvested in May. It also yields abundantly.

Cowpeas.

Cowpeas are an important crop in the county. Their use has become quite common within the last 10 years, though not yet as common as it should be. The crop generally follows oats in rotation,

and in such cases the seed is sowed broadcast during the month of June. The oats stubble is either disked and the seed then planted or the seed is sowed and plowed under and the land either disked or harrowed afterwards. About one-half bushel of seed per acre is used, but it has been found that a bushel gives better results. The crop is used for hay, which is generally harvested during September or October. Where planted alone, as on oats-stubble land, the yields range from one-half to 1 ton or more per acre.

A more common practice in growing cowpeas, however, is to plant the seed in the corn, either in or between the rows. About May 15, or at the cultivation preceding the "laying by" of the corn, is the usual time of seeding. In harvesting the crop some of the seed is picked, but the greater part is used as pasturage for hogs. The Unknown, Whippoorwill, Iron, and Brabham varieties are used. The last two are wilt-resistant, and popular for this reason.

Small Grains.

In the early agriculture of the region wheat formed an important crop. How its importance has dwindled, even in the last 35 or 40 years, is shown by the census returns. In 1879 the acreage was 1,928 acres; in 1889, 154 acres; and in 1909, 40 acres. In the last-named year a yield of a little over 10 bushels per acre was obtained.

At the present time there is a movement among the farmers to take up again the production of this crop.

Rye has never formed an important crop in the county. It is grown at the present time to a limited extent for winter pasturage and is cut green for hay. The use of rye for these purposes should be extended. A mixture of rye and vetch is even better than rye alone for a hay crop.

Forage and Pasturage Crops.

For roughage during the winter months peavine hay, corn fodder, and oats straw are depended upon by most of the farmers. Cotton-seed meal and hulls are also used for feed. Sorghum and millet, sown broadcast and cut before the stalks become woody, are used also. Bermuda and the native broom sedge are used for pasturage. Alfalfa has been tried with promising results. The crop is generally sown in September or October. Applications of 1,000 pounds of high-grade fertilizer and a ton of lime per acre are made. The seed is well inoculated before sowing.

Vegetables.

Vegetables are grown for home use on almost every farm in the county, while larger gardens in or near the towns supply vegetables for local consumption. The growing of truck crops in connection

with canning was followed successfully for several years, but has been discontinued. Not enough vegetables are grown to supply local demands, although excellent soils and favorable climate invite their production. Cantaloupes, watermelons, asparagus, cucumbers, tomatoes, peas, beans, lettuce, cabbage, Irish and sweet potatoes, and crops of a similar nature can be grown in the county.

Peaches.

Peaches are produced commercially in the county. Much of the fruit is of high quality and supplies a fancy trade. Peaches yield well and have good shipping qualities. At the present time there are 270 acres in orchards, containing about 43,000 trees.

The cultural management of the orchards is highly developed. The land is plowed thoroughly each year and cultivated from 6 to 10 times during the growing season, or as often as the conditions require, and every effort is put forth to keep the trees in a healthy condition. The trees are fertilized by the application to each tree of 4 or 5 pounds of an 8–2–10 fertilizer, the potash being applied in the form of the sulphate. When applied in the form of muriate the keeping quality of the fruit is thought to be injured. Cowpeas are sown broadcast in the orchards and the vines either plowed under or cut for hay. The trees begin bearing about the third or fourth year, producing at first about one-half crate to the tree. The 8 and 10 year old trees in good seasons yield from 1 to 1½ crates each.

A number of varieties are grown, the most promising being the following: Mayflower, Early King, Arpbeauty, Uneeda, Queen o' Dixie, Carman, Belle, and Elberta. The varieties ripen in the order named, the first about the middle of May and the last early in July.

The orchards are located on the Norfolk sandy loam and Greenville stony clay loam. The trees on the last-named soil have not come into bearing at the present time.

Live Stock.

The live-stock industry of the county is neglected and large quantities of beef, pork, lard, butter, etc., must be brought in to supply the local demand. According to the Thirteenth Census there were in the county in 1909 3,720 cattle, 2,024 of which were dairy cows; 705 horses, 3,291 mules, 13,804 hogs, and 201 sheep and goats. The value of all the domestic animals was $703,094, and the farms reporting domestic animals numbered 2,515. Nearly all of the horses and mules are shipped into the county from other States. Good draft animals are maintained. The farmers are becoming more interested in the production of live stock as pure-bred stock is gradually being

introduced. Among the breeds of hogs are found the Poland China, Berkshire, Duroc Jersey, and Tamworth. Beef breeds of cattle are also being introduced, chief of which is the Shorthorn. The Jersey is a favorite dairy breed. In 1909 there were produced 387,703 gallons of milk, of which 10,314 gallons were sold. The butter produced amounted to 161,315 pounds, and of this 15,599 pounds were sold.

Fertilizers.

According to the Thirteenth Census, $326,186 was expended in this county in 1909 for commercial fertilizers. Most of this sum was used to purchase mixed goods, very few farmers mixing their fertilizers. Where this is done the ingredients usually combined and the proportions used are as follows: 200 pounds of 16 per cent acid phosphate, 200 pounds of 12 per cent kainit, and 100 pounds of cottonseed meal.

Farm Tenure.

Of the 2,741 farms in the county in 1910, only 375, or 13.7 per cent, were operated by their owners and the remainder by tenants. Ten years earlier the percentage was 22.2 per cent. There is thus a tendency to depend still more upon tenant farming. Under the prevailing system of leasing farm lands the landowner furnishes the land, stock, feed, implements, and one-half the fertilizer, and in return receives one-half the product, except cotton seed, of which he receives the entire amount. Land may also be rented for cash or for a definite quantity of cotton. Ordinarily the cash rent is $5 an acre. Where cotton is the consideration from 1 bale to 2½ bales is asked for a one-horse farm (30 acres). By far the greater number of tenants are negroes.

In addition to the labor employed under the system of tenancy, considerable labor is hired on the farms. In 1909 the expenditure for this purpose was $209,826. The supply of labor is ordinarily adequate. For ordinary farm work laborers are paid from 50 cents to $1 a day. Cotton pickers receive so much a hundred pounds of seed cotton.

Number and Size of Farms.

In the county there are 2,741 farms, averaging 64.9[1] acres each, of which 48.1 acres is classed as improved land. Seventy-four per cent of the total area of the county consists of improved land. Of the total number of farms, 1,536 are between 20 and 49 acres each, 671 between 50 and 99 acres, and 268 between 100 and 174 acres.

[1] The individual holding averages more than this. The census tabulates each tenancy as a "farm."

SOILS.

Including Muck and Swamp, 35 distinct types of soil were identified in Terrell County. Each color on the accompanying map represents a different type of soil. The soils are divided, according to texture, into sands, fine sands, loamy sands, sandy loams, loams, clay loams, and clays. There are usually more than one kind of each of these classes, the differences being based on color, character of subsoil, drainage, and origin.

The soils of the county are alluvial and upland, the latter being derived mainly from unconsolidated clays and sands, marls, and possibly beds of consolidated limestone.

The county lies wholly within the Coastal Plain, the greater part of it being underlain by a series of limestones, sandy limestones, clay, marl, and sandy beds belonging to a formation known to geologists as Vicksburg.[1] In the western part of the county a series of red sands constitutes the main soil-forming material, this, according to Veatch, being a part of the Claiborne formation. Limestone very rarely outcrops, but can be found beneath large areas within 10 to 15 feet of the surface. Its solution has given rise to the sink holes or small pondlike depressions which strongly mark the general topography of the southern part of the county. In these depressions are found the Grady soils. Limestone may have contributed to the formation of these soils, though the sandy portion of the soil may have been in part washed from the adjoining higher-lying areas. Siliceous remains of the limestone, in the form of chert fragments, are left over the surface in sufficient quantities in places to form a stony soil.

The alluvial types comprise the soils of overflowed areas and the second bottoms or terraces. The overflowed bottoms consist largely of Muck and Ocklocknee material. The latter material is of too complex a nature to be separated into distinct types, and has been shown simply as Swamp.

The proportions of sand, silt, and clay have a very great influence on the quality of any soil. The greater part of the county is composed of a group of soils designated as sandy loams, in which the surface consists chiefly of sandy material and the subsoil of sandy clay. This group includes the most widely cultivated and most productive soils in southern Georgia. They are good both for truck and general farming. They are about the lightest of the general farming soils and the heaviest of the trucking soils in the State. Cotton matures earlier than on heavier types. On this account farmers have a decided advantage on these soils in the fight against the boll weevil. The subsoils of this group retain moisture very well and prevent the rapid leaching of fertilizers. Seven of the soils belong to this group.

[1] Veatch. Geology of the Coastal Plain of Georgia.

The fine sandy loam group comprises soils in which the texture of the surface is somewhat finer than the sandy loams. The soils are consequently heavier. Three types of soil belong to this group.

The loam group has but one type. This group is somewhat heavier than the fine sandy loam and is better adapted to general farm crops.

The loamy sandy types are better adapted to early truck crops than to general farm crops, as these, with the sand group, are unfavorable for the retention of moisture over continued periods of drought.

The clay loam group is represented over a large area by one type. Four other types are also found. It is better for general farming than for light truck crops, but heavier implements and work stock are required for putting the land into good preparation for planting.

The silty clay loam group is intermediate in texture between the clay loam and the clay. Only one type, poorly drained, is found in this group.

Only one clay soil was found. This is used scarcely at all for agriculture, on account of its poor drainage.

Iron concretions and accretions are developed within the soil mass of several soils to a sufficient extent to afford a decidedly gravelly character. The pebbles range in size from one-fourth to five-eighths of an inch in diameter. They are roundish in form and are composed of limonite and impurities of sand and clay. They are associated with the Tifton sandy loam, Orangeburg gravelly sandy loam, and the Greenville gravelly sandy loam and gravelly clay loam.

It is not exceptional to find a large number of areas where the soils are so complexly arranged or their physical characters so similar that it is impracticable to delineate their boundaries upon a map of this scale or to determine where the boundaries between them should be placed.

The sand and loamy sand types are found chiefly in the western part of the county. The Ruston, Tifton, and Norfolk sandy loams predominate over a large proportion of the county, except in the extreme western and northwestern end. The red soils (Greenville and Orangeburg) are found in every part of the county.

Fourteen series of soils are recognized and two miscellaneous types, Muck and Swamp. Each series represents a number of soils having all features in common except texture. The series are the Greenville, Orangeburg, Ruston, Tifton, Norfolk, Grady, Kalmia, Sumter, Amite, Hoffman, Myatt, Thompson, Leaf, and Cahaba.

Soils of the Greenville series cover a large area in Terrell County and form the most productive land, all the types being more productive than the average of the corresponding types in the other

series. Seven types are recognized, viz, the Greenville loamy sand, sandy loam, loam, gravelly sandy loam, gravelly clay loam, clay loam, and stony clay loam.

Of the Orangeburg series three types are mapped, the sand, sandy loam, and gravelly sandy loam. Important agricultural areas are included in these types.

The following table gives the name and the actual and relative extent of each of the soils mapped in the county:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Greenville clay loam	31,808	14.9	Kalmia sand	1,408	0.6
Norfolk sandy loam	26,816	14.3	Sumter stony sandy loam	1,344	.6
Deep phase	3,584		Orangeburg gravelly sandy loam	960	.4
Greenville sandy loam	22,592	10.6	Greenville stony clay loam	896	.4
Tifton sandy loam	19,648	9.2	Myatt silty clay loam	896	.4
Swamp	14,400	6.7	Cahaba loamy sand	768	.3
Orangeburg sandy loam	12,416	5.8	Sumter sandy loam	704	.3
Greenville loamy sand	11,456	5.4	Amite clay loam	640	.3
Grady clay loam	9,920	4.6	Amite loamy sand	512	.2
Orangeburg sand	9,344	4.4	Leaf fine sandy loam	512	.2
Greenville gravelly clay loam	8,768	4.1	Kalmia fine sandy loam	448	.2
Ruston sandy loam	6,784	3.2	Kalmia fine sand	256	.1
Ruston clay loam	5,376	2.5	Hoffman clay loam	192	.1
Greenville loam	5,312	2.5	Sumter clay	128	.1
Grady sandy loam	4,736	2.2	Myatt sand	128	.1
Greenville gravelly sandy loam	3,776	1.8	Thompson fine sand	64	.1
Ruston sand	3,392	1.6	Thompson fine sandy loam	64	.1
Muck	1,984	.9			
Norfolk sand	1,728	.8	Total	213,760	

GREENVILLE SERIES.

The surface soils of the Greenville series are typically reddish to red in color, and the subsoils are invariably some shade of red, usually dark or deep red. The subsoil is usually free from excess moisture and has a friable structure. These soils are found exclusively in the Coastal Plain from the Carolinas to Texas. They occupy well-drained situations.

GREENVILLE LOAMY SAND.

The Greenville loamy sand ranges from grayish brown to brownish red in color and from a sand to loamy sand in texture to a depth of 6 to 12 inches, the average depth being about 7 inches. The subsoil consists of a red loamy sand which gradually becomes heavier and passes into a red sticky sand to sandy loam between 18 and 34 inches of the surface.

The grayish color is predominant over a large part of the area, but the subsoil is invariably a red to light-red sand in the upper

part, becoming loamy at some point below 18 inches. Frequently the gray color of the surface seems to be due to a washing of the fine material. When such land is freshly plowed, however, sufficient fine material is turned up to produce the characteristic grayish-brown color. This gray phase is the lightest of the type. It grades into the Orangeburg sand type. A typical area of the phase is found in the vicinity of Wiliford Mill, in the northwestern part of the county. The heaviest areas of the soil, on the other hand, approach the Greenville sandy loam. Here the surface consists of a dark brownish red loamy sand and the subsoil of deep-red loamy sand, the latter passing into red sandy loam at about 20 inches. The lower subsoil is slightly sticky, though considerably lighter in texture and looser in structure than that of the sandy loam member of the series. The agricultural value of this heavier phase is noticeably higher than that of the lighter soil.

There are included with this soil areas of Orangeburg sand and Greenville sandy loam which could not be satisfactorily separated on account of their small size.

The Greenville loamy sand is extensively developed. The largest areas are found in the western part of the county, occurring along Ichawaynochaway Creek and its tributaries. The type is developed on both sides of the various streams and extends to within a short distance of their headwaters. Typical developments of the type in this part of the county are found in the vicinity of Meltons Mill, Jones Mill, Pierce Chapel, Wiliford Mill, and northwest of Doverel. Small areas of this soil also occur along the south side of Bear Creek, in the northern part of the county.

The type occupies gentle slopes along the stream courses, with a few level to gently undulating interstream areas. The most common occurrence is on long, gentle slopes. Some of these are furrowed by deep gullies. In cultivation it is necessary to terrace the more sloping areas to prevent gullying. In higher positions, where the topography is more undulating, the light phase of the type is more commonly developed. The heavier typical soil occurs more generally where the surface is more nearly level and where the type occupies basinlike depressions. A typical example of the latter condition is found about 1½ miles northwest of Meltons Mill.

Ample drainage is afforded by the surface relief and by the ready passage of the surface water through the soil. Over most of this land the type is excessively drained and crops are likely to suffer during periods of protracted dry spells. The heavy phase withstands drought better than the light phase.

There is only a very small part of this type that has not been cultivated. The native forest is composed mainly of oak, mostly scrubby, and a scattering of longleaf and shortleaf pine. This soil

has a wide adaptation to crops. The texture is light enough to make it suitable for the production of early truck and yet sufficiently heavy to be used in the production of the general farm crops. Cantaloupes, watermelons, and garden crops such as radishes, beans, peas, cucumbers, cabbage, tomatoes, and onions yield well. Bermuda onions of good quality have been grown in a small way. The soil has a low content of vegetable matter and its open texture causes the rapid disappearance of such material when supplied in manure or green crops plowed under, yet it is just as essential in this soil as in any.

This soil is chiefly utilized in the production of cotton and corn, the yields being about one-fifth to one-half bale of cotton and 8 to 15 bushels of corn per acre. Where the soil is carefully managed, the crop well fertilized, and the supply of organic matter adequate, the yields range from one-half to three-fourths bale of cotton and from 15 to 25 bushels of corn per acre. On account of the loose structure it is believed advisable to apply fertilizer in two or more applications to prevent loss from leaching.

The type is easily cultivated under a wide range of moisture conditions and can be worked into excellent tilth. Light implements can be used to good advantage. One of the drawbacks of the type is that it is not able to supply sufficient moisture for those crops which draw heavily upon the moisture supply. Agricultural conditions on this soil are rather poor, owing chiefly to indifferent management by tenants, by whom most of the land is farmed.

GREENVILLE SANDY LOAM.

The soil of the Greenville sandy loam consists of a brownish-red loamy sand extending to an average depth of 7 or 8 inches. This is underlain by a red sandy loam, which in turn quickly passes into a red or dull-red sandy clay. The subsoil material becomes heavier and tougher with increase in depth. Occasionally the lower subsoil between the depths of 24 and 36 inches is mottled with thin streaks of yellowish red.

Besides the areas of typical soil there are found important variations. The color of the surface in some places is red or reddish brown and in others more brownish than red. Removal of the finer particles from the surface material causes this decided light-brown color, freshly plowed land showing the brownish-red color of the typical soil. The texture of the soil ranges from a sand on one extreme to light sandy loam on the other. The former occurs usually where the heavy subsoil is found at greater depths, while the latter is more common where the heavier material is near the surface. The lighter or more sandy phase of the type is found well represented in a large area in the vicinity of Doverel. Here the surface consists of

a brownish-red loamy sand extending to an average depth of 15 inches, where the red, friable sandy clay is encountered. The depth to the subsoil increases gradually as an adjoining area of Greenville loamy sand is approached. Similar conditions prevail in a few other areas wherein this type grades into the loamy sand member of this series. In a few areas the type represents a gradation from areas of the Greenville clay loam on one side to the Greenville loamy sand on the other. Under these circumstances the soil boundaries are in places arbitrary. In the south-central and southeastern parts of the county there is a considerable acreage of this soil wherein the surface is a red or dark-red sandy loam immediately underlain by red, friable sandy clay. Such areas closely approach the associated clay loam type of this series. This phase is more common than the lighter textured phase. Probably surface material averages heavier in this county than in other areas surveyed in the State. Small local spots of the Greenville clay loam are found where erosion has removed the surface material, leaving the heavy subsoil exposed. Areas of the Orangeburg sandy loam too small to map are also included. Small ironstone gravel is found scattered over the surface of certain areas, but in quantities insufficient to warrant the mapping of such areas as a gravelly sandy loam. This condition is most common in the southeastern part of the county.

The Greenville sandy loam is residual from the weathering of the sandy and argillaceous limestones of the region and from beds of unconsolidated marine material. In the southeastern part of the county the underlying limestone lies in many places within a few feet of the surface. Fragments of chert are occasionally found in the soil material.

Usually the Greenville sandy loam is found in those parts of the county where the drainage is well established and where the drainage waters are carried by surface streams. The largest areas of the type extend from the vicinity of Graves Station north and south for a distance of about 4 miles and thence west to the county line. Another region containing large areas extends from the vicinity of Herod and Chickasawhachee to the Dougherty County line. Important areas are found in the neighborhood of Parrott, and additional smaller areas are scattered over various parts of the county.

The topography of the type varies from gently sloping in areas along streamways to more gently undulating areas interrupted by sink-hole depressions. Most of the areas are gently sloping, but the relief is sufficient to give ample drainage. In some places the slopes are steep enough to require terracing to prevent erosion. On such steep slopes large quantities of the original surface material have been removed, exposing the underlying clay.

Practically all the original forest growth of the Greenville sandy loam has been removed. It consisted of hardwoods, chiefly varieties of oak, hickory, dogwood, and some longleaf and shortleaf pine. A large part of the type is not cultivated. Abandoned fields support a heavy growth of broom sedge. This soil is one of high agricultural value, though its physical characteristics tend to restrict its use to the production of general farm crops. Good yields of cotton, corn, oats, cowpeas, soy beans, vetch, rye, and wheat are obtained from it. The yields of these crops, however, vary greatly, depending mainly upon the efficiency of management. Ordinarily with an application of 200 to 300 pounds of a fair grade of commercial fertilizer the yields range from one-third to three-fourths bale of cotton per acre. Corn yields from 8 to 20 bushels per acre. This crop is fertilized lightly. Under the best management, with applications of 300 to 500 pounds of high-grade fertilizer, cotton yields a bale and corn about 30 bushels per acre. About 45 bushels of oats, 1 ton of peavine hay, and 1 ton of vetch-rye hay are the ordinary acreage yields of these crops, where proper methods of farming are employed.

The Greenville sandy loam requires special care in handling to preserve its best physical condition. The surface soil when cultivated absorbs a large quantity of moisture, which in its passage downward is checked by the heavier subsoil material. For the type to retain moisture more advantageously it is necessary that the subsoil be opened by deep plowing and subsoiling. The depth of plowing should, however, be increased gradually. The type can not be plowed under a wide range of moisture conditions. If it contains much water and is sticky hard clods form upon drying. This is especially true where the subsoil material is near the surface, as in the shallow areas of the type. The preparation of the soil requires heavier implements and work stock than the sandy loam types of other series. The type is somewhat subject to drought.

The value of this soil for general farming is not appreciated as it should be. The type is a good foundation for large revenue to the county when carefully managed. Too much of the land is held in large areas and is farmed by negro tenants. Where small tracts are farmed by the owners yields of the various crops are equal to those from any other soils of the county.

Average results of mechanical analyses of samples of the soil and subsoil follow:

Mechanical analyses of Greenville sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253229, 253231.....	Soil.....	1.4	11.8	18.3	36.6	12.0	9.3	10.5
253230, 253232.....	Subsoil.....	1.6	10.1	14.6	28.5	9.1	9.0	27.3

GREENVILLE LOAM.

The Greenville loam consists of a dark-brown or dark reddish brown loam, underlain at a depth of 6 to 10 inches by a dark-red, heavy, friable sandy clay, extending to a depth of 36 inches or more. The color of the surface soil is the feature which distinguishes the type from any other in the county. The subsoil is also of a darker red color and more friable texture than that of associated types. It is in some places locally called "chocolate land" and in other places "snuff-colored land."

Local differences and gradations are found in the different areas of this type. In some places the immediate surface material contains more sand than is typical, while in other places the heavy clay subsoil comes nearer the surface. These areas are Greenville sandy loam and Greenville clay loam, respectively, but are too small to map. With one or two exceptions, in which there is a small amount, both the soil and subsoil are free from concretionary gravel.

The origin of the Greenville loam is the same as that of the other Greenville soils.

This type is not restricted in its development to any one part of the county, but is found in bodies of varying size in all parts. One of the largest areas lies just west of Sardis Church, in the northwestern part of the county. Five areas of a hundred acres or more each are mapped along Brantley Creek below Dawson. Some other large areas are found along Chickasawhachee Creek and in the vicinity of Graves Station. The smaller areas throughout the county contain from 5 to as many as 60 acres each, the average size being approximately 25 acres. Small areas are found within other types, but they are too small to separate satisfactorily.

The Greenville loam occupies two main topographic positions—interstream uplands and the slopes bordering streams. In the former the type consists of level tracts representing the smoothest and most level topography of the county; in the latter position it occupies the smooth, gently sloping areas along the stream courses. These positions resemble bench lands, as they lie intermediate between the swamps of the streams and the level of the upland. The topographic position affords ample surface drainage; only in local spots is the drainage inadequate. The type absorbs and holds a large amount of moisture.

Practically the whole area of this soil is in cultivation. Cotton and corn are the chief crops. The yields vary considerably with different methods of management. As much as 1 bale of cotton and 40 bushels of corn per acre have been produced. Crops make a somewhat more luxuriant growth than on other upland soils. The type has been found to produce good crops of forage plants, such as legumes and

grasses. It is not primarily a trucking soil, on account of its heavy texture and moisture-holding capacity. In places some difficulty in getting a stand of cotton is experienced. The plants grow for a short time, then wilt.

Although the soil is mellow, there is some difficulty in plowing it. Instead of turning easily off the moldboard it sticks and pushes and does not scour. On this account it is commonly called "push land." Both the soil and subsoil retain moisture for a considerable length of time, though crops are subject to drought as on the clay or sand soils.

Prices of land of this type of soil range from $30 to $70 an acre, depending upon the location.

GREENVILLE CLAY LOAM.

Over the greater part of the areas mapped as Greenville clay loam the surface soil consists of a dark-red clay loam with an average depth of 6 inches. The subsoil is a bright-red, heavy sandy clay, which becomes heavier and more compact in the lower portion. Frequently at a depth of 30 inches or more there are found mottlings of a yellowish-red color, these becoming more plentiful and distinct in the substratum. Much of the surface soil, however, consists of a sandy clay loam with a depth of 6 to 8 inches, or a heavy sandy loam of a reddish-brown color, 4 inches deep, and grading abruptly into a heavy sandy clay. Such areas were included with the clay loam, because with proper plowing there would be sufficient sandy clay turned and mixed with the lighter portions to produce a clay loam. There are also small areas where there is found 3 inches of a dark brownish red heavy loam immediately underlain by sandy clay. The immediate surface of this variation has the appearance of the Greenville loam type, but the depth of its surface covering is too shallow to be classed with the loam. The subsoil in such places to a depth of 18 inches is a deep-red or dark brownish red instead of the characteristic lighter red color. Iron concretions are found on knolls and some slopes, but in quantities insufficient to warrant classing the areas with the gravelly clay loam type. Eroded areas consist mainly of clay, because of the removal of the fine surface material. Chert fragments are sometimes found over the surface, and fragments of chert and limestone may be encountered within the lower depths of the subsoil, especially in the southeastern part of the county. Besides the variations mentioned, areas of Greenville sandy loam are included. On account of their small size and irregular occurrence, these could not be shown separately.

The Greenville clay loam is the most extensively developed soil in the county. Large areas are mapped in the north-central part just west and south of Parrott, around Cottondale, and in a strip of

country extending from near New Bethel Church northeast to St. Paul Church. These areas include the heaviest portions of the type, wherein the surface is a clay loam having a deep-red to red color and differing but little from the subsoil. In the south-central part the areas lie, as a rule, close to the streams. The type here developed has a sandy clay surface. Several large areas of a similar nature are found around Doverel. In the eastern part of the county well-developed areas follow on either side of Sugar Creek to the terraces of the Kinchafoonee River. The type is found in a similar position along Middle Creek, extending from near Bronwood to the Lee County line. Smaller areas are scattered over the county.

The type has a very gently undulating to slightly rolling topography. It occupies high interstream divides and a very few slopes in the north-central part. In other sections of the county it is very seldom found on divides, but is conspicuous along rather uneven and gently rolling slopes. The relief affords good drainage. The run-off is too rapid, on account of both slope and texture, over most of the type for the soil to absorb a fair proportion of the moisture falling upon it. Terraces are necessary over the greater part of the type to prevent erosion.

Practically all the original timber, consisting of various species of oak, hickory, dogwood, and other hardwoods, with some shortleaf yellow pine, has been removed from the areas of this soil.

The Greenville clay loam is too heavy for truck growing, though vegetables for home use do very well. They mature too late in the season for the early market. Pecans make a slow growth. To compensate for this it is said that the trees finally reach a larger size and are more productive. Small grains, corn, forage crops, cotton, and grass are better suited to this soil. It is the heaviest general farming soil in the county and is utilized almost entirely for this purpose. The average yields are considerably lower than they should be. Cotton yields from one-fourth to 1 bale; corn, 8 to 40 bushels; oats, 15 to 50 bushels; and peavine hay from one-third to 1 ton per acre. The lower yields are obtained by tenant farmers, where only 200 to 300 pounds of fertilizer are applied per acre. The higher yields are obtained by farmers operating or managing tenants on their own farms. In this case the general farm practice is not only better, but the applications of fertilizers are larger, ranging ordinarily from 300 to 600 pounds per acre. Mixtures of 10–4–4 or 10–3–2 grade are used. By growing more small grains the land would be replenished with much-needed organic matter which has been largely removed by continuous cropping to clean cultivated crops. This accounts in part for the compact, heavy surface soil.

The Greenville clay loam requires more care and attention in handling than any other soil in the county. The range of moisture con-

ditions under which it can be worked is narrow. If a slight excess of moisture be present at the time of plowing, clods will form upon drying. On the other hand, the soil when dry is too hard to plow. To handle this soil properly requires heavy implements and heavy teams. Part of the land at present is plowed with a single mule, whereas three would be none too many. Conditions on this type are fair to good, according to the way it is handled. Land values range from $20 to $75 or more an acre, depending upon improvements and location.

GREENVILLE GRAVELLY SANDY LOAM.

The Greenville gravelly sandy loam consists of a reddish-brown to red sand or loamy sand, underlain at an average depth of 6 to 8 inches by a bright-red friable sandy clay. The soil and subsoil contain concretionary gravel, the quantity varying from 20 to 50 per cent of the soil mass. The particles range from one-eighth inch to 2 inches in diameter and are composed mainly of iron oxides with impurities of sand and clay. The distribution of this coarse material is irregular. It appears to have existed originally within the soil section as strata which outcrop at various places, especially near the top of gentle slopes. From these points it is sometimes scattered over adjoining areas and distributed through the soil section.

Certain variations from the typical soil are found. Areas of Greenville sandy loam and Greenville gravelly clay loam which were too small in size to separate are included. Where the immediate surface material has been washed clean, the areas resemble the Orangeburg gravelly sandy loam, but when freshly cultivated they become of a reddish color. Parts of the areas consist of a light brownish red sand underlain at 6 to 8 inches by a red loamy sand, which in turn is underlain at 15 to 18 inches by the usual red friable sandy clay. These portions represent a light phase of the type. The typical soil is a rather heavy sandy loam approaching a clay loam.

This soil is found in small bodies, chiefly in the southern and eastern parts of the county. It is always associated with the other red soils of the county. Some of the largest typical areas lie 1½ to 2 miles southeast of the town of Chickasawhachee. Important areas lie east of Bronwood, between Middle Creek and the Smithville Road. Other areas were mapped southeast of Graves Station and in the vicinity of Herod.

The topographic features of the type consist of knolls, slopes, and uneven areas between ponds. The surface is gently undulating to slightly rolling. Usually the more uneven the surface the greater the quantity of gravel. There are found no low, poorly drained areas of this type, though there may be included low areas of other soils in which water sometimes collects.

On this type the forest growth was similar to that found on the closely associated Greenville sandy loam type. All this has now been removed and the land is in cultivation as a general farming soil. Average yields are about the same as the average for the soils of the county. These yields are low, chiefly on account of the prevailing tenant system. Where the land is well turned, the seed bed well prepared, frequent cultivation given the crop, the crops rotated, organic matter supplied, and the crops liberally fertilized, yields of three-fourths to 1 bale of cotton, 20 to 30 bushels of corn, 20 to 40 bushels of oats and one-half to three-fourths ton of peavine hay are obtained.

The gravel facilitates the absorption of moisture and permits the working of the soil under a wide range of moisture conditions. The subsoil is heavy and is capable of retaining large quantities of moisture. It is, however, usually hard and compacted from continued plowing at the same depth. To remedy this the depth of plowing should be varied, and where shallow, as it is in most cases, increased gradually.

GREENVILLE GRAVELLY CLAY LOAM.

The Greenville gravelly clay loam consists of a red or brownish-red heavy clay loam to a depth of 4 to 5 inches, underlain by a heavy, deep-red friable sandy clay which extends to a depth of 3 feet or more. Over the surface and throughout the soil mass is found an abundance of roundish concretionary material. In the lower portion of the subsoil there are faint mottlings of ocherous yellow. The subsoil is very heavy, especially in this lower part, and both soil and subsoil become sticky when wet.

The included concretions are dark brown or reddish brown or occasionally black in color, seemingly composed mainly of irons, and from one-fourth to an inch or two in diameter. The gravel is coarser in the eastern part of the county than elsewhere. All of the gravel material appears to exist as bands or strata within the soil mass, the outcrops being found along slopes.

All of the areas are not so heavy as the typical soil. In the southern part of the county the soil is a sandy clay loam on the surface. In other areas it is a loamy sand, underlain at 3 or 4 inches by a heavy sandy clay. Deep plowing would turn sufficient of the heavy sandy clay material to produce a sandy clay loam for the surface soil. Regardless of minor differences, the type is recognized by the heavy surface soil and the large quantity of pebbles scattered over the surface. It is closely allied to the Greenville clay loam, the main differences being in gravel content and in topography. Small areas of the Greenville clay loam are included.

Some of the most important areas of Greenville gravelly clay loam are found in the eastern part of the county in the vicinity of Salem Church. Others are in the upland fronting the Kinchafoonee River from Mossy Creek southeast to the Central of Georgia Railway. In the southern part of the county are numerous areas south, southeast, and southwest of Dawson and between Herod and Doverel. In the vicinity of Long Pond, in the south-central part, a typical area occurs. Small areas are scattered extensively over the greater part of the county in the region where the red soils are found. The type forms an important soil of the county, being more extensive than the Greenville gravelly sandy loam or Orangeburg gravelly sandy loam.

The topography of the Greenville gravelly clay loam is one of the most characteristic features. The surface is rather sharply undulating or choppy, consisting of small hillocks and depressions. Seemingly the best developments of this soil occur only where the surface features are broken and irregular. Small bodies usually lie on slopes or slight knolls within other Greenville types.

Nearly all the original timber has been removed from this soil. Uncleared areas support a growth of oak, hickory, dogwood, and other hardwoods, with a scattering of shortleaf yellow pine. On a few abandoned plantations a heavy growth of broom sedge and a second growth of shortleaf yellow pine have sprung up.

The Greenville gravelly clay loam is productive but difficult to farm. The heavy texture, together with the large content of gravel, makes the soil hard to plow. Two or three mules are required to turn the soil satisfactorily. The plowed soil is inclined to become compacted and harden after exposure for a short time. The incorporation of a large quantity of organic matter in the soil would minimize this tendency. A serious objection to the use of this soil is that the crops suffer from drought. The soil and subsoil are retentive of moisture, but not so much of the rainfall enters the soil as should, apparently on account of its hard, compact surface. General farming, growing small grain, corn, forage crops, and cotton is the type of agriculture that will succeed best on this soil. It is utilized locally in this way, except that wheat is not grown at present. The average yields are low, except in favorable seasons. There are farms located on this soil which produce a bale of cotton, 40 bushels of corn, 55 bushels of oats, and over a ton of peavine hay per acre. On these farms special attention is given to the fertilization, the soil is broken deeply, and organic matter is supplied by turning under green manuring crops.

A wide range of agricultural conditions is found on this soil. Land values vary from $20 to $75 an acre, depending upon improvements and location.

GREENVILLE STONY CLAY LOAM.

The Greenville stony clay loam consists of a red sandy clay loam, underlain by a friable dark-red sandy clay, becoming heavier and more plastic as the lower depths are approached. The color is usually darker than that of the other Greenville types. Not infrequently the extreme lower section of the profile becomes a plastic, sticky, dark-red clay, while pockets of similar material may be found near the surface. Rotten rock forms a part of the subsoil in several places.

The type differs from the clay loam of the series in the presence upon the surface and throughout the soil and subsoil of fragments of chert in varying degrees of abundance. In places it covers the entire surface of the ground, while in other areas the quantity of rock is not sufficient to interfere seriously with cultural operations. These cherty fragments vary in size from fine gravel to bowlders 2 feet or more in diameter, probably averaging 4 to 5 inches in diameter.

Small areas of soil with a gray sandy surface and others with yellowish-red sandy clay subsoil have been included with this type.

This type is found in areas of various size. The most important are situated in the upland adjacent to the valley of the Kinchafoonee River between the Central of Georgia Railway and the Wilburn Bridge. Other small areas are scattered widely over the county.

The topography of the Greenville stony clay loam varies from gently undulating to gently rolling. This provides good surface drainage and the stony character of the subsoil facilitates internal drainage.

The original timber growth, mainly hardwoods, has been removed. Second-growth forest consists almost exclusively of shortleaf pine. Between 50 and 60 per cent of the type is now under cultivation and the usual farm crops are grown. It is regarded as good land, but difficult to cultivate. Yields on the less stony areas are somewhat higher than on the other Greenville types.

Although the type is looked upon as a fertile soil, the abundance of stones hinders if it does not prevent tillage. For this reason plowing is often less thorough than desirable. The type holds moisture well and the aeration and drainage are better than in the stone-free soils.

Agricultural conditions on this type as a whole are rather poor, the type being farmed by tenants. Some good farms, however, are located on it.

ORANGEBURG SERIES.

The Orangeburg soils are gray in color at the surface, changing to reddish in the upper subsoil and finally to bright red, usually within a foot of the surface. The subsoil is typically free from mottling and

has a friable structure. They are found in the Coastal Plain, are derived from unconsolidated deposits of late geological age, and occur in well-drained situations.

ORANGEBURG SAND.

The Orangeburg sand consists of a surface soil of a gray sand 8 inches deep, underlain by a yellowish-red sand, which gradually becomes heavier and redder until at 12 to 20 inches it passes into a bright-red friable loamy sand. From this depth to 36 inches there is no appreciable change in the material, either as regards color or texture.

The surface soil in some places is brownish gray, in this case approaching the color of the Greenville soils. The intermediate layer of yellowish-red sand generally lying between the surface soil and subsoil may be lacking. Again, at a depth of 32 inches there may be found a friable sandy clay, such areas being really the Orangeburg sandy loam and included here because of their small size.

In the northwestern corner of the county there is a region of a few square miles in which the areas of this type have a fine texture. These areas were not separated under a distinct type designation on account of their small relative importance.

The Orangeburg sand is extensively developed along the western border of the county. The largest areas are confined to points along Ichawaynochaway Creek and its branches, being developed especially in the points of land which extend to the confluence of one or more branches. Typical areas are found in the vicinity of Jones Mill on Cheenubba Creek and Wiliford Mill on Turkey Creek.

The topography is undulating to gently rolling, the areas forming gentle slopes, rounded stream divides, and gently undulating interstream areas. As a result of the topography and the open structure of the subsoil the drainage is good.

Practically all of this type has been cleared of the native forest. There remain a few bodies of shortleaf and longleaf pine and scattering oak. There are also areas which are covered with a thick growth of scrub oak, with occasional pines. This kind of forest is usually found on the lighter phase of the type.

Corn, cotton, and oats, with some cowpeas for forage, are the leading crops. The yields are moderate to low. The open and loose nature of the soil and subsoil is not favorable for the retention of moisture for long periods of time, and the crops are subject to drought, especially during protracted dry seasons. With moderate applications of fertilizer corn produces from 10 to 18 bushels, cotton one-fourth to two-thirds bale, cowpeas about one-third to one-half ton of hay, and oats about 15 bushels per acre.

While this soil is not naturally fertile, it can be built up to a moderately productive condition by proper treatment and fertilization. It is neither as fertile as the Orangeburg sandy loam nor as poor as the Ruston or Norfolk sand, occupying practically an intermediate position. The texture places it among the early truck soils, since it warms early in the spring and supports vegetation from ten days to two weeks earlier than the soils having a heavy sandy clay subsoil. It has been found that such crops as beans, English peas, tomatoes, and similar truck crops are successful. Irish potatoes have yielded as high as 100 bushels per acre and sweet potatoes 300 bushels per acre. By planting Irish potatoes early and applying fertilizer liberally the land can be used the same season for sweet potatoes.

ORANGEBURG GRAVELLY SANDY LOAM.

The Orangeburg gravelly sandy loam consists of a gray to light brownish gray sand which passes into a yellowish-red loamy sand at 7 inches, continuing to a depth of 10 or 12 inches. At or about this depth the material passes into the subsoil proper, which is a bright-red friable sandy clay. The distinguishing feature of this type is the concretionary ferruginous gravel which is scattered over the surface and disseminated through the soil and subsoil. The average size of this gravel is from one-fourth to one-half inch in diameter, though in some places gravel fragments 2 inches in diameter are found in great abundance. Small knolls, made up chiefly of gravel with very little fine soil material, occur in different parts of the areas. The gravel is similar in every way to that which characterizes other gravelly types.

In some of the areas of Orangeburg gravelly sandy loam there are included small areas of Greenville gravelly sandy loam, Ruston gravelly sandy loam, and Orangeburg sandy loam. Such areas are not shown on the map on account of their small size. Areas in which the heavy subsoil immediately underlies the gray surface mantle are found. When such areas are freshly plowed, the surface becomes of a grayish-brown color.

Areas of this soil have a level to gently undulating surface, being formed of knolls, hillocks, and slopes. This topography and the open texture give thorough drainage. Small sink depressions are found within the areas, which collect the run-off from the surrounding land.

A greater part of this type occurs in the southeastern part of the county, between Kiokee and Chickasawhachee Creeks. Other areas lie southeast of Sasser, near the county line.

Most of the type has been cleared of its native growth, which consisted of longleaf and shortleaf yellow pine, with a scattering of more

or less scrubby hardwoods. Broom sedge is conspicuous in the abandoned fields.

The Orangeburg gravelly sandy loam is well suited for the production of general farm crops, trucking crops, and in a few instances other special crops. Pecan trees grow well and mature early on this soil. Alfalfa has been grown with fair success. The yields of the various crops are about the same as for the Orangeburg sandy loam. The gravel is thought to make the soil more desirable than the sandy loam.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam is a gray sand which passes gradually into yellowish-gray sand to an average depth of 7 or 8 inches. This is underlain by a reddish-yellow loamy sand, resting at 12 or 15 inches on a bright-red friable sandy clay. The heavier portion of the subsoil extends to a depth of 3 feet or more.

The surface soil is in some places brownish gray, such areas approaching in color the Greenville sandy loam. These two soils grade imperceptibly into each other, although the surface soil of the Orangeburg is usually lighter in texture and color than that of the Greenville type. In some of the areas the surface material rests immediately upon the red friable clay subsoil, the intermediate stratum of reddish-yellow loamy sand being absent.

Relatively large areas of this type are found in the southern part of the county, one of the largest occurring in the vicinity of Clarks Mill. This area represents a lighter phase of the type, the heavy subsoil here being found at lower depths than in the typical soil. Several areas of irregular shape and size occur in the southeastern part of the county, in which the soil is somewhat heavier. Included with these bodies are small areas of Greenville sandy loam and Ruston sandy loam. In the vicinity of Chickasawhachee are found several important areas. A large body lies in the western part of the county between Ichawaynochaway Creek and the Randolph County line. Small areas are widely scattered over the county.

In topography the Orangeburg sandy loam is generally level to undulating. Some of the smoothest land in the county, consisting of well-defined interstream or upland areas, is of this type of soil. Sinkhole depressions, into which the surface run-off flows, are of frequent occurrence. Stream courses do not commonly traverse the areas, yet the soil is well drained. A large part of the drainage is through underground drainage ways.

This type is practically all cleared of the native forest, which consisted of longleaf and shortleaf pine, with oak and some hickory and dogwood. A large proportion of the oak was of a scrubby

growth. Broom sedge and sassafras are found in the abandoned fields.

The Orangeburg sandy loam is a productive soil. Its natural productiveness is perhaps not so great as that of the Greenville sandy loam, but this is compensated for by the greater ease of cultivation, which is a factor of moment under the prevailing condition of farming. The open and loose structure of the soil favors the absorption of moisture, while the friable sandy clay subsoil is retentive and prevents the rapid leaching of fertilizers. Crops are sometimes injured by long dry periods, but danger from this source can be lessened by incorporating large quantities of organic matter in the soil and by frequent shallow cultivation. At present the soil is low in organic matter.

Owing to its light texture and excellent drainage conditions this is an early soil. The land can be prepared at an earlier date in the spring than most of the soils of the county, and for this reason the farmers on this soil have an advantage in fighting the boll weevil. This type is used for trucking as well as for general farming. Trucking crops, such as peas, beans, tomatoes, potatoes, etc., mature somewhat later than on the Orangeburg sand, but, on the other hand, the quality is better and the yields higher. Pecan trees seem to do well on this soil.

The Orangeburg sandy loam is used chiefly for the production of the staple crops. On account of the prevailing methods of tenant farming the yields are lower than they should be. With good management a bale of cotton, 30 bushels of corn, 40 bushels of oats, and 1 ton of peavine hay per acre may be produced. The average yields are about one-third as large. Alfalfa has been tried with fair success. The land was limed with a ton of burnt lime per acre and fertilized with 1,000 pounds of high-grade fertilizer. Improvement of this soil depends to a large degree upon three essentials, viz, the incorporation of organic matter, the rotation of crops, including a legume, and deep breaking of the land.

The agricultural conditions on this soil are on the whole rather poor, as much of it is abandoned and other areas are farmed by tenants, yet some of the best-developed farms of the county are found on it. Land values range from $20 to $60 an acre.

Norfolk Series.

The Norfolk soils are gray in color with pale-yellow to bright-yellow subsoils, usually free from mottling and granular or friable in structure. They are found in the Coastal Plain, are derived from unconsolidated deposits of late geological age, and occur in well-drained situations. In this county the sand and sandy loam types are mapped.

NORFOLK SAND.

The surface soil of the Norfolk sand is uniformly a light-gray or yellowish-gray, loose, incoherent sand. The subsoil, which is encountered from 5 to 8 inches below the surface, consists of a light-yellow to very pale yellow sand and extends to depths of over 3 feet. Frequently below this depth the color becomes brighter as the underlying substratum of sandy clay material is approached. In some places the subsoil tends toward the reddish-yellow color characteristic of the Ruston sand, but the Norfolk color is always pale.

Areas of this type lie mainly in the western part of the county along the streams. It occurs in small patches on the slopes of Ichawaynochaway Creek and on each side of Turkey Creek, from the Webster County line south to its confluence with Pine Head Creek. A short distance southeast of Macedonia Church lies a large body which is one of the most typical in the county. There are several areas about 3 miles southeast of Sasser and a small strip south of Cottondale.

The surface drainage is good and the open and loose nature of the subsoil affords thorough to excessive underdrainage. Crops are subject, therefore, to serious damage in dry weather. The type is locally called a "thirsty soil."

A large proportion of the native forest has been cleared away. Remaining uncleared areas have a scrubby growth of various species of oak, with occasional stunted longleaf and shortleaf yellow pine. Cleared areas uncultivated are covered with a heavy growth of broom sedge, with some second-growth shortleaf pine and sassafras.

The Norfolk sand is an unproductive type of soil, with little capacity to retain moisture or fertilizer. Even in good seasons crops make a poor growth and give light yields. Under the best conditions cotton can not be expected to produce more than one-half bale; corn, 12 bushels; and oats, 15 bushels per acre. In the best utilization of this type crops should be selected that mature late in the spring or in early summer before the hot, dry periods of midsummer. As the soil is well drained and warms up early in the spring, it is well suited for the production of early trucking crops.

Agricultural conditions on this type are poor. The land is not generally desired for farming, and at present most of the area is in an uncultivated state. Land values are low.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam is a pale-gray to medium dark gray sand which becomes yellowish gray in the lower part. The subsoil, encountered at an average depth of 7 or 8 inches, consists of a bright-yellow sandy loam, which passes quickly into a

bright-yellow friable sandy clay. In some places the soil and subsoil carry a small quantity of concretionary ferruginous gravel. Generally the quantity is considerably less than is found in the Tifton sandy loam, but in many places the line between the two types is an arbitrary one.

The areas which were mapped between Mossy Creek, Bronwood, Middle Creek, and the Lee County line are of a finer texture in the surface than is typical.

Large areas of the Norfolk sandy loam are found in the county, some of the largest lying between Dawson and Parrott. A large area occurs in the eastern part of the county, beginning in the vicinity of Middle Creek and extending southward through Sasser and Chickasawhachee, and thence tapering to a point about a mile north of the Dougherty County line. Extensive areas are found within 3 miles of Bronwood. Several irregular-shaped bodies are situated between Dawson and Doverel, while in the southwestern corner of the county there are numerous areas which lie midway between Ichawaynochaway and Chickasawhachee Creeks. Other small areas are scattered in various parts of the county.

The type occupies smooth, level to gently undulating watershed areas. Those lying near Sasser have a flat surface, in which there are many sink depressions. The same condition prevails in the southwestern part of the county. The drainage conditions are excellent. There is little danger of serious erosion.

This soil originally supported a forest of longleaf pine, with a scattering of shortleaf pine and a few more or less scrubby hardwoods. A few uncleaned areas exist, but most of the land has been cleared and utilized for farming. In uncultivated fields broom sedge is the prevailing growth.

The Norfolk sandy loam is a productive soil and one easily maintained in a good state of cultivation. The surface soil is loose and can be kept in good tilth with little difficulty. It absorbs moisture readily and the subsoil holds a good supply in store for the use of crops. Tillage does not require especially heavy implements or draft stock, and the soil can be worked over a wide range of moisture conditions.

The texture of the type makes it valuable for growing early truck and small fruits, as well as for general farming. Alfalfa has been produced on it with fair success. Vegetables grown on this soil mature somewhat later than on the light sandy soils, but this is compensated for by better quality and better yields. Among the vegetables that have been grown are tomatoes, cucumbers, asparagus, string beans, peas, radishes, onions, cabbage, cantaloupes, watermelons, lettuce, and similar crops. Among the berry crops are strawberries, dewberries, raspberries, and blackberries. Peaches, as well

as pears and plums, have done well on this soil. In the production of the truck crops large quantities of organic matter and from 1,000 to 2,000 pounds of a high-grade fertilizer per acre are applied to the soil. Sugar cane produces a light-colored sirup of good flavor, in marked contrast to the darker color and inferior flavor of that grown on the Orangeburg and Greenville soils.

The type is highly prized for cotton. The yields are considerably higher in proportion to the quantity of fertilizer used than on this soil in other parts of the State. As much as three-fourths of a bale to a bale of cotton is obtained per acre, with the application of 200 to 300 pounds of a low-grade fertilizer. Where larger quantities are applied and more attention paid to the crop, it is common to average a bale per acre over the entire farm, and maximum yields of 2 bales per acre have been reported. The lint is of high quality and free from stain.

Corn yields range from 10 to 40 bushels per acre. The lower yields are due mainly to lack of attention. Returns from other farm crops, such as peanuts, velvet beans, cowpeas, oats, and rye, are generally good. In other sections of the State shade-grown tobacco of the cigar wrapper and filler types has been produced with success on this soil.

As may be inferred from the foregoing, the Norfolk sandy loam is valued highly, and only the Tifton sandy loam is considered equally as valuable.

Norfolk sandy loam, deep phase.—The deep phase of the Norfolk sandy loam is separated from the typical on account of a greater depth to the subsoil as well as differences in topography, drainage, and color. The surface soil consists of a light-gray to pale yellowish gray loose sand which extends to an average depth of 8 inches. Below this there is found a pale-yellow loamy sand which grades into a sandy loam and at a depth of 24 inches passes into a pale-yellow friable sandy clay. The surface color is distinctly lighter and the subsoil a paler yellow than in the typical soil.

This phase is not extensive in this county. Some of the largest areas are situated within a 3-mile radius of Sasser. Several other bodies are found in the southeastern part of the county. In the southwestern part, within a short distance of the Calhoun County line, several irregular-shaped areas occur adjoining and lying between areas of Grady soils. A small area is found north of St. Paul Church, while several other areas lie northeast of Dawson.

In general the topography is level to flat, the phase forming low-lying or depressed areas surrounding and lying between lime-sink ponds. The drainage here is generally fair, although after heavy rains the subsoil is saturated. Drainage is accomplished by underground stream channels. In the areas northeast of Dawson and

north of St. Paul Church the topography is gently undulating to sloping, as the areas occupy ridges.

The phase supports a forest growth similar to that on the typical soil. Around the edges of sink holes are found some water oak. The phase is used for the production of the same crops as the typical soil. The yields are somewhat lower.

Tifton Series.

The Tifton soils are gray in color, underlain by a pale-yellow, changing downward to a rather bright yellow or usually deep-yellow subsoil, free from mottling and friable in structure. Both soil and subsoil contain considerable though varying amounts of concretionary ferruginous gravel, the occurrence of this differentiating the soils of this series from those of the Norfolk series, though the Tifton has usually a deeper yellow color in the subsoil than the Norfolk. They are found in the Coastal Plain and occupy well-drained situations. In this county the sandy loam type only is identified.

Tifton sandy loam.

The surface soil of the Tifton sandy loam is a grayish-brown sand to loamy sand 6 or 8 inches deep. The subsoil in the upper portion is a bright-yellow loamy sand, gradually changing to a sandy loam and passing at 10 to 12 inches into a stiff, though friable, bright-yellow sandy clay, which extends to a depth of 3 feet or more. It is not uncommon to find mottlings of reddish yellow in the lower part of the subsoil, and from 18 to 36 inches it is usually more sticky than in the upper part. In some areas the lower part of the soil proper is yellowish brown instead of brown.

The type is separated from the Norfolk sandy loam mainly because of the presence of concretionary ferruginous gravel in both soil and subsoil. The quantity, however, is, as a rule, smaller than in the same soil in other parts of the State. The gravel is dark brown in color and is smooth and roundish, globular, or obloid. It is composed mainly of iron oxide, sand, and clay. The average size is about three-eighths inch in diameter, but in many areas, especially in the vicinity of Bronwood, the particles are smaller, about one-fourth inch or less in diameter.

A few areas of the Norfolk sandy loam are included with the Tifton sandy loam on account of the irregular occurrence of the gravel. In places the boundary line between the two types is arbitrary. There are also included with the Tifton soil areas wherein the subsoil is yellowish red instead of bright yellow. Such areas represent bodies of the Ruston gravelly sandy loam that were not separated on account of intricate association and small extent. In the region around

Sasser and northeast of Dawson, in the vicinity of Piney Grove Church, the texture and color of the soil are both lighter than the average. A number of local areas occur where the surface is dark gray in color.

This soil is usually found on the high land, and as soon as the land drops toward the streams lower strata are exposed and the type gives way to other soils. In a few places chert fragments are found, though it is not thought that the weathered products of limestone have entered into the composition of this soil as freely as in the Greenville soils. Quartzite gravel are sometimes sparsely scattered over the surface.

The Tifton sandy loam occupies areas having a level to gently undulating topography. As soon as the general topography varies to even a small degree from level the subsoil develops the yellowish-red color above mentioned, and where the variation is sufficiently great other types of soil are found. Only a few terraces to prevent erosion are required on the type, as the gravel tends to retard destructive erosion. The surface configuration of the type as a whole affords good surface drainage, while the friable sandy clay of the subsoil favors good internal drainage. In some of the lower-lying areas water remains for a time on the surface after heavy rains.

The Tifton sandy loam is extensively developed within the county. The areas are rather large and frequently interrupted by other soils. The main bodies are included within a triangular area between the towns of Dawson, Bronwood, and Sasser. Several important areas are found south and east of Chickasawhachee. Other areas extend from the outskirts of Dawson in a northwestward direction for about 3 miles and lie in the vicinity of Parrott, including the greater part of that town. A few scattered areas are found southwest of Dawson. This type is developed only on the divides surrounding the headwaters of the various streams of the county.

This type formerly supported a heavy forest of longleaf and some shortleaf pine, with a scattering of oak and hickory. All the merchantable timber has been removed and the land cleared and used for agriculture. The type is locally known as "gray gravelly land," and is highly valued for general farming. Tillage operations are easily performed; the surface soil readily absorbs moisture, the subsoil has marked retentive power, holding an ample supply of moisture, and little damage is suffered by the crops during even protracted periods of drought. The soil is a good cotton soil, producing large yields of lint of excellent quality and generally free from stain. Besides cotton, the type can be used to advantage in the production of many crops, including general farm crops, truck crops, and some special crops. It is possible to secure two crops of Irish potatoes or

sweet potatoes within a growing season. Pecan trees make a rapid growth, while peaches, pears, and plums do well. It has been found that alfalfa can be successfully grown on this soil.

Yields of general farm crops on the farms of this soil type are among the highest in the county. Average yields of 1 bale of cotton per acre over entire farms are common, while as much as 2 bales per acre has been produced. Oat yields have been correspondingly high, varying from 40 to 60 bushels per acre, and a yield of 40 bushels per acre of corn is common. Where such yields are obtained proper management of the soil and crop is followed. Such management includes deep plowing, thorough preparation of the seed bed, intensive and shallow cultivation, and the application of adequate quantities of high-grade fertilizer. The best results are obtained where the crops are rotated in a systematic manner and where the details of scientific management are most closely carried out. Not the least valuable characteristic of this type is the ease with which it can be brought to a high state of productiveness.

One of the methods used to improve this soil consists in subsoiling the land and following this by the growing of legumes and turning under a portion of the vines to replenish the organic matter. After this the proper rotation of cotton, corn with cowpeas planted between the rows, and oats followed by cowpeas, figures largely in the improvement. Six hundred pounds of a 10–2–4 fertilizer is used on the cotton and corn crops, being applied in two applications. Hogs, cowpeas, and peanuts is a money-making combination with many of the farmers on this soil.

Soil of this type ranges in value from $35 to $100 an acre.

Average results of mechanical analyses of samples of the soil and subsoil are as follows:

Mechanical analyses of Tifton sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253235, 253273.....	Soil.....	1.5	10.5	15.7	38.7	14.6	11.3	7.6
253236, 253274.....	Subsoil.....	.8	7.3	11.9	30.3	12.6	11.9	25.2

RUSTON SERIES.

The Ruston soils are grayish brown to brown in color, changing downward to yellowish and then to reddish yellow or yellowish red, the latter color appearing gradually, but usually at a foot or less below the surface. The subsoils are free from mottling and friable in structure. These soils are found in the Coastal Plain and are derived

from unconsolidated deposits of late geological age. They occur in well-drained situations. In this survey the Ruston sand, sandy loam, and clay loam are identified.

RUSTON SAND.

The Ruston sand consists of a gray to yellowish-gray sand, underlain at a depth of 7 or 8 inches by a reddish-yellow, loose sand, which gradually changes to yellowish red in the lower part, and often to a loamy sand, between 30 and 36 inches. In the subsoil this type is intermediate between the lighter colored Norfolk on one side and the redder Orangeburg on the other. Inclusions of areas of both these types are found in the areas mapped. Such areas were not separated on account of their complex arrangement and small extent.

The Ruston sand is a loose, incoherent soil. Moisture is rapidly absorbed by it and as readily lost through percolating. Frequent rains are required to produce a crop. The loose surface soil is easily plowed and cultivated.

This soil is found almost exclusively in the western part of the county, in the territory drained by the Ichawaynochaway and its tributaries. It follows the courses of these various streams to within a short distance of their heads. Typical areas lie in the vicinity of the Randolph County line and Ichawaynochaway Creek. A few small areas are situated in the northern extremity of the county near Halls Bridge and another about a mile north of Graves Station.

The Ruston sand has a gently undulating to gently rolling topography. It occupies slopes, knolls, interstream divides, and crests of ridges, and is thoroughly drained. It is locally called a "thirsty soil," and where the topography favors rapid drainage the type has many of the characteristics of the Norfolk sand.

Nearly all of the areas of the Ruston sand have been cleared of the native forest, which comprised various species of oak, prominent among them blackjack, post, black, and red oak. A few stunted shortleaf and longleaf pines are now found on some areas.

This sand is a poor and unproductive type of soil. The content of organic matter is very low, most of it being destroyed within a short time after putting the fields in cultivation. Crops suffer from drought, the damage often being serious. Cotton yields about one-fifth to one-third bale per acre; corn about 10 and oats about 15 bushels, respectively. Higher yields may be obtained by careful management and fertilization. The main effort in the improvement of the type should be directed toward the restoration of organic matter.

In texture this soil seems well suited to the production of early truck crops, but little of the land is used for any purpose.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a gray or grayish-brown sand with a depth of 7 to 10 inches. The subsoil is a yellowish-red to reddish-yellow sandy clay, friable in the upper part, but somewhat heavy, tough, and sticky in the lower part. Frequently there is between the surface soil and subsoil a stratum consisting of a reddish-yellow friable sandy loam.

This type presents a number of variations in its physical features. Over many of the areas the heavy subsoil is exposed as gall spots, and in others it approaches so near the surface that plowing forms a brown sandy loam soil. Concretionary ferruginous gravel is present in occasional spots, while waterworn pebbles are found in places. Areas of Greenville stony clay loam, Tifton sandy loam, and Norfolk sandy loam too small to map separately are included with the Ruston. In some places chert fragments are scattered over the surface.

Areas of the Ruston sandy loam have an undulating to rolling topography. They form for the most part irregular, broken, and eroded slopes. In such areas terraces are required to protect the soil against injury by erosion. Some of the smaller areas occupy smooth, gentle slopes, or in a few cases are level. Drainage is thorough; in fact, the run-off is inclined to be too rapid over a great part of the type, and crops suffer from drought.

Typical areas of this soil lie in the north-central part of the county. A strip of territory beginning at the Webster County line and extending southward, between Parrott and Cottondale, to Dawson and Bronwood includes the greater percentage of the type. Between Chickasawhachee and the Dougherty County line are several important areas.

Originally the Ruston sandy loam areas supported a forest of longleaf and shortleaf pine, with some oak and hickory. Much of it has been cleared and is not in farms. It is a moderately productive soil, but the topography makes it less desirable than other soils of similar character. The surface soil is easily cultivated when the subsoil is not too close to the surface. The latter is tough, hard, and difficult to break. One great need of the type is to increase the feeding zone of roots by opening the subsoil to aeration and moisture. In its present condition it does not readily absorb water. Deeper plowing would remedy this in part and would check erosion to a certain extent.

The yields of the various crops are low. Cotton yields from one-fifth to one-half bale, corn 8 to 15 bushels, and oats from 12 to 20 bushels per acre. Most of the type is farmed by negro tenants. On smooth areas, where the farm practice is better, the yields are considerably higher.

The following table gives the average results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Ruston sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253207, 253215, 253221.	Soil.....	2.5	9.6	15.9	36.9	17.4	10.2	7.5
253208, 253216, 253222.	Subsoil...	1.2	5.3	9.6	23.9	13.1	19.4	27.7

RUSTON CLAY LOAM.

The Ruston clay loam consists of a grayish-brown to brown sandy clay loam, underlain at about 6 inches by a reddish-yellow to yellowish-red sandy clay. The subsoil generally is friable in the upper part, but at lower depths becomes stiff, tough, and heavy. Mottlings of various shades of yellow are common at lower depths.

This soil is intermediate between the Greenville clay loam and the Ruston sandy loam and grades imperceptibly into both. Many of the areas of this type really consist of spots of Ruston sandy loam and spots of Ruston clay, the latter, however, predominating. Concretionary ferruginous gravel, as well as waterworn quartzite gravel, is found scattered over the surface. It is sufficient in several instances to give a gravelly soil. Ferruginous sandstone outcrops in several places and fragments of the rock are also scattered over the surface in varying quantities. The greatest variations in the type are noted where the topography is most irregular and broken.

The type is practically the same in origin as the Ruston sandy loam type. Erosion, however, has removed the greater part of the surface sands, leaving a shallower covering and consequently giving a heavier surface soil. It is developed along slopes of streams and in other positions which are favorable to the washing of the land. The presence of quantities of quartzite gravel and sandstone fragments are points of difference distinguishing this soil from the Greenville or Norfolk soils.

The Ruston clay loam occupies broken and eroded slopes along the courses and around the heads of streams, with some less broken and gently sloping areas.

Typical areas are situated in the north-central part of the county. Several prominent areas are found near Spring Hill Church. To the west of this place the areas extend along drainage ways which form the headwaters of Mossy Creek. Important areas are found in the vicinity of Pleasant Hill, east of Parrott, extending eastward toward Beulah School and southeast to the vicinity of St. Paul

Church and Oakville. A few areas are found north of Dawson and east of this place between the headwaters of Chickasawhachee and Middle Creeks.

The Ruston clay loam was forested with a heavy growth of longleaf and shortleaf pine and a scattering of oak and some hickory. Nearly all of the timber has been removed. There are a few areas which are uncleared, the timber of which has been cut over, leaving a rather scrubby growth of oak. The heavy nature of this soil makes it more a general farming than a trucking soil. In this county it is utilized exclusively for the production of general farm crops. The yields obtained vary greatly, the more broken areas giving lower yields than the more gently rolling areas. The best farmers on the best areas obtain as much as three-fourths to a bale of cotton, 40 bushels of oats, and 20 bushels of corn per acre. Ordinary yields obtained by tenants are from one-third to five-eighths bale of cotton, 8 to 12 bushels of corn, and 15 to 25 bushels of oats per acre. Very little peavine hay is produced on this type. It yields about one-half ton per acre. The soil is not so productive as the Greenville clay loam or the Norfolk sandy loam. The heavy character of the surface and the more or less broken topography make tillage rather difficult. The soil must be worked under a rather narrow range of moisture conditions, and heavy implements and draft stock are required to handle the type properly. The soil is greatly deficient in organic matter.

Agricultural conditions average rather poor over this soil, as much of it is farmed by tenants and is in a rather neglected state. However, some very good farms are found on it.

Grady Series.

The Grady soils are dark gray in color, underlain at 6 to 12 inches by light-gray to bluish-gray or drab subsoils, mottled with yellowish or reddish or both yellowish and reddish spots, and in the heavier member having a plastic structure. The soils are found in the Coastal Plain and are associated with calcareous formations. They occupy rather poorly drained situations. In Terrell County the sandy loam and clay loam types are mapped.

Grady sandy loam.

The surface soil of the Grady sandy loam is gray to dark-gray loamy sand to sandy loam, extending to depths of 7 to 12 inches. The subsoil is a light-gray to drab plastic clay or sandy clay, which is mottled with yellowish or reddish or both colors in the lower portion. Small areas of the Grady clay loam are included.

The Grady sandy loam seems to be derived chiefly from the weathering of limestone. Masses of chert and chert fragments are sometimes scattered over the surface and in the subsoil.

The type is found in small areas scattered over the entire county, being especially well developed in the southern part. These areas are rounded or oval or narrow, winding, irregular depressions, usually imperfectly drained. They range in extent from 2 to somewhat over 100 acres.

The Grady sandy loam is characterized by its flat, low-lying position and its poor drainage. The depressions occupying it are "lime sinks" and are marked by a distinct drop ranging from 1 foot to as much as 10 feet below the upland surface. Into these sinks the surface waters of surrounding land drain, and having no drainage outlets, except by the percolation of the water downward to underground streams, many areas hold water during the greater part of the year.

A forest of shortleaf pine, live oak, water oak, gum, mayhaw, swamp maple, elm, cypress, and holly covers the greater part of this soil. Along the stream courses many species of trees, shrubs, and grasses occur. In some of the sinks cypress and water-loving plants of small growth are found almost exclusively.

Only a few areas of this type are cultivated. Where drained it produces good crops of corn, sorghum, sugar cane, oats, and cowpeas.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Grady sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253233	Soil	1.6	12.8	17.2	32.8	11.4	15.5	8.8
253234	Subsoil	1.9	11.4	15.2	27.8	7.8	11.5	24.6

GRADY CLAY LOAM.

The Grady clay loam is a gray to dark-gray sandy clay loam or clay loam with a depth of 5 to 8 inches. The subsoil is a gray, drab, or grayish-drab sandy clay to clay mottled with light gray, bluish, drab, and yellow. Reddish-yellow and dull-red mottlings also occur, but not in all areas of the type. The subsoil is usually tough, heavy, plastic, and sticky, especially in the lower part. When thoroughly dry it is so compact and powdery that it is difficult to penetrate with the soil auger. The type includes areas of the Grady sandy loam which could not be satisfactorily separated, and in most cases the line between these two types is rather arbitrary.

The Grady clay loam seems to be residual from limestone. Chert and fragments of limestone are found scattered over the surface and in many places within the subsoil. The upper surface layer in places consists of sandy wash from the surrounding soils.

The type occurs in lime-sink depressions and other imperfectly drained areas. Several hundred of these areas occur; they are irregular in shape and vary in extent from about 2 acres to 200 acres or more. Many spots exist that are too small to be mapped. Areas of this soil are most numerous in the southern part of the county. Most of the areas are intermittently covered by water, and some are wet nearly the entire year. Some areas that have free connection with underground streams are drained. Along the stream courses and around heads of streams the surface is generally wet.

Most of the areas of Grady clay loam are covered with a heavy growth of vegetation, the same as found on the Grady sandy loam. A few of the areas are cleared, drained, and farmed. These produce fair crops of corn, sugar cane, oats, and cotton. Cotton tends to produce too much weed.

The heavy character of the surface soil makes plowing difficult. The type must be worked when moisture conditions are just right, or it clods badly. Even where artificially drained the soil remains wet and soggy for a considerable time after heavy rains. Heavy farming implements are required to handle this soil satisfactorily. Some of the areas of this type that are uncleared and undrained are inimical to conditions of good sanitation.

Results of mechanical analyses of samples of the soil and subsoil follow:

Mechanical analyses of Grady clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253265	Soil	2.6	10.0	12.2	24.6	8.2	20.2	22.0
253266	Subsoil	1.2	5.6	5.9	12.4	4.1	16.1	54.9

SUMTER SERIES.

The Sumter soils are yellowish in color, with lighter-yellow subsoils to about 30 inches where they become compact, plastic, and mottled yellow and gray. Both soil and subsoil contain large quantities of chert fragments. The upper subsoil is friable in structure. They are found in the Coastal Plain and seem to be the product of the weathering of calcareous rocks. They occur in moderately well-drained situations. In Terrell County the sandy loam, stony sandy loam, and clay types are recognized.

SUMTER SANDY LOAM.

The surface soil of the Sumter sandy loam is a gray to yellowish-gray loamy sand to sandy loam, with a depth of 5 to 8 inches. The upper subsoil is a yellow sandy clay loam. This quickly passes into a bright-yellow friable sandy clay, which becomes somewhat heavier as the depth increases. Lying below this material at depths varying from 24 to 36 inches is a compact plastic clay of mottled yellow and drab. In some places mottlings of brownish gray, red, and gray also occur. Usually this latter condition is found in the lower parts of the 3-foot soil profile, and along the contact with areas of the Grady sandy loam.

The characteristics of the friable sandy clay portion of the subsoil correspond to those of the Norfolk series, while those of the heavier and mottled phase are the same as are found in the Grady soils. Thus the subsoil at different depths embodies the characteristics of each of the two types. Locally there are spots where the heavier portion of the subsoil is lacking, and, on the other hand, this material in places comes within 12 or 15 inches of the surface. The latter condition occurs chiefly in the vicinity of included areas of Grady soils. In some cases the surface soil is of a dark-gray color. This occurs especially where conditions have been favorable for the accumulation of organic matter. In an area 3½ miles southeast of Bronwood the texture is fine sandy loam rather than sandy loam.

Three areas of this type have been mapped in the county. Two of them lie southeast of Bronwood; the third area is in the southeastern part of the county, about 4 miles southeast of Sasser. Several other small developments of this type were found, but these were not mapped on account of their small size and close association with the deep phase of the Norfolk sandy loam.

The type occupies depressions distinctly lower than the surrounding soils, but it is higher than the areas of poorly drained Grady soils which occur within its general areas. The surface is flat and drainage sluggish. Drainage is accomplished by the water passing through the subsoil to subterranean channels. There are no surface outlets for the water. A growth of longleaf and shortleaf pine, with some oak, including water oak, and an undergrowth of broom sedge, is found on this soil. Much of the best timber has been removed in two of the areas, leaving a somewhat scattered and stunted growth of oak. None of the type is under cultivation.

Before utilization this soil must be drained. It has been found very productive under favorable climatic conditions, a dry season being most propitious. Cotton has produced 1 bale and corn 20 to 40 bushels per acre under proper management. It can also be used

for the production of oats, forage crops, and the later truck crops. Sugar cane produces an excellent quality of sirup.

SUMTER STONY SANDY LOAM.

In its typical development the fine earth of the immediate surface of the Sumter stony sandy loam is a grayish sand or loamy sand. This quickly grades into a pale-yellowish loamy sand, which extends to depths ranging from 6 to 10 inches. Beneath this is a friable yellow sandy clay, which, at about 18 to 24 inches, passes into a tough, stiff, rather plastic, heavier clay of a mottled reddish and yellowish or a reddish-yellow and grayish color. The type is made stony by the abundant chert fragments and nodules, together with some chalcedony. These fragments, which vary in size from small gravel to pieces about 2 feet in diameter, are found on the surface and in the subsoil. In some places the stones are so plentiful that the surface is entirely covered and the subsoil is so filled that it is impossible to bore into it. Generally there is present a sufficient quantity to interfere seriously with cultivation. In some fields the stones have been picked up and placed in piles.

Besides the typical development there are many variations in this soil and there are some included areas of other soils. About 3 miles southeast of Sasser there are some small areas where the subsoil is a reddish, yellowish, and grayish loamy sand which closely resembles decomposed rock. This sand may extend to depths of 3 feet or more or may grade at a depth of 32 inches or more into a heavy, plastic gray clay mottled with yellow and red. In other scattered areas the surface soil is only 3 or 4 inches deep. Areas were included with this type in which the surface is a gray sand and the subsoil a yellow loamy sand underlain at 18 inches by a friable yellow sandy clay. Such inclusions represent Norfolk sandy loam, which carries considerable quantities of rock fragments. Again, it may be found that the subsoil is a reddish-yellow, plastic, sticky clay throughout the profile.

In general the surface of this soil is undulating to rolling. It occupies slopes and crests of ridges, commonly the slopes and breaks surrounding the heads of small streams or drainage ways. The surface drainage is thorough.

The Sumter stony sandy loam is principally developed in the northeastern part of the county. Some of the largest areas are found north of Dawson, near Zion Church, and about 3 miles southeast of Sasser. Only a small percentage of the type is under cultivation at present. Although difficult to cultivate, it is regarded as a very productive soil when cultivated. Cotton ordinarily yields from one-fourth to four-fifths bale per acre, and a bale per acre is not an

uncommon return. Corn and oats yield from 10 to 20 and 15 to 30 bushels per acre, respectively.

SUMTER CLAY.

The Sumter clay is a heavy, rather stiff, plastic yellow clay, with practically no difference between the soil and the subsoil. The subsoil is mottled with various shades of red, yellow, and gray in the lower portion, i. e., below 18 to 36 inches. In a few areas the surface material is a sandy clay loam of a yellowish-gray or gray color.

This type occupies depressed areas, with flat or basin-shaped surfaces. Some of the areas are not so distinctly depressed as those in which the Grady soils are developed, but they are low enough to be poorly drained and to catch the drainage water from surrounding areas. They do not remain under water and are not generally in so wet a condition as the Grady soils.

None of the Sumter clay is under cultivation. It is covered with a growth of shortleaf pine, black gum, sweet gum, and various species of oaks, including water oak. Drainage will be necessary before the soil can be used for farming. This can be accomplished by ditches, as the areas generally lie near small streams or natural drainage ways. Tillage of the soil, even when drained, would be somewhat difficult on account of the heavy, intractable nature of the material. Heavy implements would be required to plow the land properly. It would be well suited for the production of forage and grass crops, oats, corn, and cotton.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Sumter clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253217	Soil	1.5	6.4	10.0	24.0	8.4	17.6	31.9
253218	Subsoil	1.6	6.4	9.7	21.1	8.4	17.1	35.6

HOFFMAN SERIES.

The Hoffman soils are gray, the subsoils mottled reddish gray and pinkish in color and compact in structure. Cementation with iron oxide has occurred in the subsoils in places. Whitish powdery material occurs in small lumps in the subsoil. In the heavier members the deep subsoil is plastic. This series is found in the Coastal Plain and is derived from the unconsolidated clays, sands, and sandy clays. The soils occupy well-drained situations, except locally. In this county the clay loam type only is mapped.

HOFFMAN CLAY LOAM.

The surface soil of the Hoffman clay loam is a light-gray or ash-colored loamy sand passing at 2 to 5 inches into a pale-yellow or yellowish-gray sandy clay. Below this lies a tough, compact, plastic clay of yellowish-gray color, mottled with yellow, drab, pink, and red. The general appearance of the surface and of the subsoil in exposures is whitish, and this has given rise to the local term "white chalky land." In some places the sandy material is considerably deeper than stated above.

Small areas of this soil lie along the slopes of streams and around the heads of drainage ways. Several areas are found within 2 miles of Dawson and in the vicinity of Yeomans and St. Paul Church. Drainage is generally good.

Most of the area is in cultivation. In uncultivated areas shortleaf pine, sassafras, and persimmon are found as a second growth, while broom sedge and Bermuda grass are common. On this account some of the areas are abandoned. Cotton yields from one-fifth to one-third bale, corn from 8 to 12 bushels, and oats from 10 to 20 bushels per acre. The type is hard to work on account of its heavy, stiff character.

The results of mechanical analyses of samples of the soil and subsoil follow:

Mechanical analyses of Hoffman clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
253211	Soil	1.7	9.6	14.0	27.4	9.6	9.3	28.1
253212	Subsoil	3.0	13.4	13.5	19.4	5.2	8.9	36.6

KALMIA SERIES.

The Kalmia soils are essentially the same in all respects, except their occurrence on and derivation from river terraces, as the Norfolk soils. They should be considered therefore as Norfolk soils occupying second-bottom or terrace situations. They, however, carry more frequent mottlings of gray in the lower part. In Terrell County the sand, fine sand, and fine sandy loam types are mapped.

KALMIA SAND.

The Kalmia sand to a depth of 8 or 10 inches is a loose gray to yellowish-gray quartz sand. This is underlain by a pale-yellow sand, the color becoming more pronounced and the texture slightly more loamy with depth. Both surface soil and subsoil carry rather large amounts of fine sand. In places the color of the subsoil approaches

that of the Cahaba sand and in others that of the Myatt soils. Upon some small areas near the adjacent upland red silty material has washed down upon the surface of the Kalmia sand, imparting a reddish-yellow color and a texture heavier than is typical of this soil. The subsoil is in this case similar to that of the typical soil. Such an area occurs about three-eighths of a mile southwest of Halls Bridge.

Areas of this soil occur on the higher terraces of Kinchafoonee River and Bear Creek, the most extensive areas lying between these streams. Other smaller areas are irregularly distributed along the Kinchafoonee throughout its course in the county.

The topography of the Kalmia sand is level to very gently undulating, and the drainage is good. The type is not subject to overflow.

Originally this soil supported a forest of longleaf and shortleaf pine, blackjack oak, and red oak. In abandoned fields there is a second growth of shortleaf pine, hawthorn, wild plum, sassafras, and broom sedge.

The Kalmia sand is chiefly used at present for pasture. Some areas are cultivated, the general farm crops being grown. The yields are lower than on the sandy loam of the series, though crops mature somewhat earlier, an important consideration were the type ever to be used for trucking. In general the soil is classed by the farmers as one of the poorer soils of the county and valued at $10 to $20 an acre.

KALMIA FINE SAND.

The Kalmia fine sand consists of a gray or grayish-yellow fine sand, underlain at 6 or 8 inches by a subsoil of pale-yellow fine sand. Both the surface soil and subsoil are more or less incoherent.

The type is not extensively developed in Terrell County. It is found in several areas along the Kinchafoonee River from Wilburn Bridge south to the Lee County line. The largest area is found near Wrights Bridge.

The Kalmia fine sand is quite similar in physical features to the Norfolk series. It, however, is an alluvial soil, having been deposited by the Kinchafoonee River at an early stage of the development of this stream's valley. The stream later cut a deeper channel, leaving these areas well above the level of normal overflow. The areas have a level surface, and drainage is well established. Only under abnormal high-water stages of the river is the type subject to overflow.

The Kalmia fine sand at one time formed a part of the productive "river flats" of the Kinchafoonee. It is now abandoned, and a scattered second growth of shortleaf pine and broom sedge forms the most important vegetation upon it. It was covered originally with longleaf, shortleaf, and spruce pine, with some oak and other hardwoods.

The Kalmia fine sand is a productive soil, suited to both general farm and truck crops. Although the type is loose and open, its flat, low-lying position makes the moisture conditions fairly good and crops suffer less from drought than one might expect.

KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam consists of gray fine sand, yellowish in the lower part, resting on a subsoil of pale-yellow fine sand, gradually becoming heavier and passing into pale-yellow friable sandy clay at 15 to 24 inches below the surface. Mottlings of deeper shades of yellow and of gray are common in the lower part of this subsoil and in some places reddish-brown mottling occurs.

This type is found in small areas of level to gently rolling surface in various parts of the county, chiefly along the Kinchafoonee River from Olivers Mill to the Lee County line. The largest area occurs in the vicinity of the Central of Georgia Railway where it crosses the river. The areas south of the railroad represent islandlike bodies, being completely surrounded by poorly drained soils. One area of this soil lies along the Ichawaynochaway Creek about 1½ miles west of Doverel and another along Brantley Creek near its confluence with Chickasawhachee Creek. A small representative area is located just northwest of Dawson, along Canal Creek.

Only a small part of the type is cultivated at present, but at one time nearly all of it was. It is now covered with a scattered growth of shortleaf pine, sassafras, and wild plum, with broom sedge in the openings. The original forest growth was similar to that found on the Leaf fine sandy loam.

The Kalmia fine sandy loam is a valuable soil, the surface being loose and friable, rendering cultivation easy and favoring the absorption of moisture, while the texture of the subsoil favors its retention. Little damage is done by drought. The soil can be tilled under a wide range of moisture conditions, although it should not be plowed when wet.

This soil is a productive type for many different crops. Its texture is the lightest that is desirable for general farming and not so heavy as to preclude the growing of truck. Corn produces good yields, ranging from 15 to 40 bushels per acre. Oats produce 20 to 50 bushels, and cotton from one-half to 1 bale per acre. These yields are obtained ordinarily with applications of 200 to 300 pounds of an 8–2–2 or 9–2–3 fertilizer. The tendency is toward a heavy vegetative growth of crops. Good yields under good management can be expected from cantaloupes, watermelons, Irish potatoes, sweet potatoes, asparagus, lettuce, beans, English peas, cucumbers, and similar crops. Yields of sugar cane are large, a well-flavored, light-colored sirup being obtained.

Agricultural conditions at the present time are poor, as the areas were abandoned some time ago on account of labor conditions. This type is held in conjunction with other types in large plantations.

Amite Series.

The Amite soils are essentially the same in all respects, except their occurrence on and derivation from the river terraces, as the Greenville soils. They should be considered, therefore, as Greenville soils occupying second bottoms or terrace situations. In this county the Amite loamy sand and clay loam types are mapped.

AMITE LOAMY SAND.

The Amite loamy sand consists of a brown to reddish-brown loamy sand, underlain at 7 to 8 inches by a deep-red loamy sand which extends to a depth of 3 feet or more. In some places the lower part of the subsoil is sticky, and in a few local areas a sandy clay is found at a depth of 34 inches. A variation from the type exists in small areas where the surface is a light brownish gray sand; the soil here approaches the Chattahoochee loamy sand. These areas are not separated, on account of their small extent.

A typical area of Amite loamy sand lies along the Ichawaynochaway Creek in the southwestern part of the county. This area begins about 3 miles south of Doverel and extends to the Calhoun County line. One small area is found near Wilburn Bridge on the Kinchafoonee River.

The Amite loamy sand was derived from old alluvium. Subsequent adjustment of the stream has left the type on a terrace about 10 to 15 feet above overflow. It is separated from the upland by a perceptible slope, and additions of wash from the upland have taken place.

The surface is smooth, with a gentle slope toward the stream. Drainage is ample, both in run-off and downward through the subsoil.

At present the Amite loamy sand is cleared and farmed. Originally it was covered with a growth of oak, hickory, and longleaf and shortleaf pine. Abandoned areas support broom sedge, sassafras, wild plum, and some shortleaf pine.

This soil closely corresponds to the Greenville loamy sand, and its use and productiveness are the same as those of that type.

AMITE CLAY LOAM.

The surface soil of the Amite clay loam consists of a dark-red or brownish-red clay loam or sandy clay loam, extending to an average depth of 7 inches. The subsoil is a deep-red, heavy, friable sandy

clay. In the lower part of the 3-foot profile the material usually is somewhat heavier and more sticky than in the upper part.

In the areas of this type as mapped there are found places where the immediate surface is a fine sand or loamy fine sand overlying the heavy sandy clay at a depth of 4 or 5 inches. When the land is properly plowed sufficient heavy material is mixed with the upper part to produce a sandy clay loam texture. Nearly all of the type has at least a thin veneer of such fine material. In a few places a small acreage of the Amite fine sandy loam was included with the clay loam.

The Amite clay loam is a terrace soil and differs from the other Amite types in texture only. The areas lie along the Kinchafoonee River and Ichawaynochaway Creek. The largest areas along the former stream are near Wilburn Bridge and southeast of Olivers Mill. Along the latter stream one area is situated a few miles northwest of Doverel and a second about 1 mile southwest of this place.

In surface features the type is nearly level, just enough slope existing to insure sufficient drainage for the type. After heavy rains the type becomes saturated for a short time. Tile drainage would materially relieve this condition.

The Amite clay loam supported a heavy timber growth of oak, shortleaf pine and some longleaf pine. Dogwood, sassafras, hickory, and tulip poplar were also found. Nearly all of the type is cleared and cultivated at the present time. Yields have a considerable range, depending chiefly upon the management of the soil. Oats yield from 20 to 55 bushels per acre, the higher yields being obtained under favorable seasonal conditions and with liberal use of fertilizer. Cotton produces from one-fourth to 1 bale and corn from 15 to 20 bushels per acre.

The Amite clay loam is a productive soil, but on account of its heavy nature it must be carefully handled. Heavy implements and draft stock are necessary. Strict attention must be given to moisture conditions in handling the soil. It is sometimes difficult to maintain a good soil mulch.

The agricultural conditions are variable, but on the average are fair and are improving steadily.

Leaf Series.

The Leaf soils are essentially the same in all respects as the Susquehanna soils, differing from the latter in being somewhat more poorly drained, in their occurrence on terraces, and in their derivation from terrace material. They should be considered as Susquehanna soils occupying second-bottom or terrace situations. Only one type is mapped in Terrell County.

LEAF FINE SANDY LOAM.

The surface soil of the Leaf fine sandy loam, extending to a depth of about 7 inches, is a gray loamy fine sand containing some silty material. The subsoil is a tough, plastic fine sandy clay, mottled gray, reddish yellow, and red in color. The clay becomes more plastic and sticky and the sand content decreases as the lower portion of the 3-foot section is approached. The type as mapped contains a number of areas in which the surface is a very fine sandy loam and contains more organic matter than does the typical soil, the subsoil being a heavy plastic clay with little or no fine sand in it.

The Leaf fine sandy loam occurs on the lower terraces of the Kinchafoonee River, in small areas, irregularly distributed from near the mouth of Mossy Creek to the county boundary. The topography is level and the drainage is in places inadequate. Some lower-lying areas are subject to overflow in times of abnormally high water, but as a whole they stand sufficiently above normal floods to be classified with the terrace or second-bottom rather than with the first-bottom soils.

On this soil originally there grew a forest consisting chiefly of shortleaf pine, spruce pine, beech, magnolia, tulip, ash, bay, white oak, live oak, and ironwood, with an undergrowth of swamp palmetto, smilax, and blackberry vines. Much of the type has been cleared and placed under cultivation in the past. Abandoned areas support a second growth of shortleaf pine and broom sedge has covered most of the type now in this condition.

The Leaf fine sandy loam is at present used only for pasture. In most cases it would be necessary to repair and construct drainage ditches before the soil could be successfully used for farming. Formerly the land produced excellent crops of sugar cane and corn; 40 or 50 bushels of corn to the acre were often obtained, it is said, without the use of fertilizers. The abandonment of this soil was due to labor difficulties rather than to decrease in its productiveness.

CAHABA SERIES.

The surface soils of the Cahaba series are brown, ranging to reddish brown, and the subsoils are yellowish red to reddish brown. The Cahaba soils occupy old stream terraces. They are largely above overflow and comprise the best drained land of these terraces. They are most extensively and typically developed in the Gulf Coastal Plain region of Alabama and Mississippi. The soil material consists of wash from the Coastal Plain soils, with some admixture along the larger streams from the Appalachian Mountains and Piedmont Plateau of material from the soils of those regions. The Cahaba loamy sand is mapped in this county.

CAHABA LOAMY SAND.

The Cahaba loamy sand consists of 6 to 10 inches of gray to grayish-brown sand or loamy sand, usually carrying some organic matter, underlain by an orange-colored sand or loamy sand.

Areas of this soil occur on the higher terraces of the Kinchafoonee River between Halls Bridge and Mossy Creek. It is here associated with the Kalmia sand and is similar to that type in origin, topography, and drainage conditions. It is somewhat more loamy in texture, which makes it more retentive of moisture and of fertilizers than is the Kalmia sand. A small area is located on the terraces of Ichawaynochaway Creek, south of Doverel. The soil here is slightly more loamy and the subsoil of a deeper red color than is typical.

The Cahaba sand is nowhere subject to overflow. Its chief present use is for pasture, and it supports a vegetation consisting chiefly of broom sedge, wild plum, and second-growth shortleaf pine. Originally it was covered with forest similar to that of the Kalmia sand. Where under cultivation the principal crop is corn. Yields ranging from 10 to 20 bushels per acre are obtained with applications of 100 to 300 pounds of complete fertilizer. Yields of cotton are ordinarily less than one-half bale per acre. In general adaptation and value the Cahaba loamy sand is similar to the Ruston sand of the upland. Land of the Cahaba type may be purchased for $10 to $25 an acre.

MYATT SERIES.

The Myatt soils range from gray to dark gray in color; the subsoils from gray to mottled gray and yellow. In structure the subsoils are compact, usually plastic and impervious. They are found on second bottoms or river terraces, occupying the most poorly drained areas in such situations. They are confined to the terraces of the Coastal Plain region, corresponding rather closely to the Calhoun soils of the northern United States. The sand and silty clay loam types are identified.

MYATT SAND.

The Myatt sand consists of a dark-gray to black loamy sand with an average depth of 6 or 7 inches. The subsoil is a drab compact sand, usually saturated and resembling quicksand. Mottlings of yellow mark the lower subsoil and in places a gray or drab sandy clay stratum occurs. Included with this type are patches of the Kalmia sandy loam, lying in the higher and better drained areas.

Only one area of the Myatt sand is found in the county. This occurs about three-fourths of a mile south of Cottondale. Only

the included areas of Kalmia sandy loam are cleared and tilled. The timber growth consists of shortleaf pine, bay, and magnolia, with an undergrowth of azalea, moss, and various water-loving shrubs.

The soil occupies a low stream terrace and the surface relief is insufficient to afford proper drainage.

Drainage is necessary to the use of this land for farming. When cleared and drained it would be suitable for the production of both general, staple, and late-truck crops. The surface contains considerable organic matter, which would tend to make the type productive.

MYATT SILTY CLAY LOAM.

The Myatt silty clay loam is a dark-gray to drab silty clay loam with a depth of 4 to 8 inches, underlain by a drab plastic silty clay carrying mottlings of yellow or light gray. The surface material is quite variable, ranging in color from black to gray and in texture from very fine sandy loam to clay loam or heavy clay. Both the soil and subsoil are inclined to be sticky and plastic the greater part of the time. When dry the material is extremely dense and hard.

This type of soil is found along the Kinchafoonee River from the Wilburn Bridge south to the Lee County line. The areas are continuous, although broadening and then narrowing as the better drained types of the terrace are encountered.

The type occupies poorly drained depressions on the terraces of the Kinchafoonee River. The depressions represent old stream courses, sloughs, and the present courses of streams flowing over the terraces from the upland to the river.

The type supports a growth of ash, swamp maple, tulip poplar, gum, magnolia, bay, and other species of hardwoods, and spruce pine. None of the type is cleared. Drainage, which under the existing conditions is rather expensive, is necessary to fit the land for farming. If drained, the land could be used for oats, corn, and forage crops. Cultivation would be difficult on account of the stiff, heavy nature of the soil, and a heavy equipment would be required.

THOMPSON SERIES.

The surface soils of the Thompson series are gray to yellowish gray in color, the subsoils being pale yellow to mottled gray and yellow in the deeper subsoil, and the depth to the mottled subsoil depending upon the texture, being less in the heavy types. They are alluvial in origin, occurring on the flood plains of streams within the Coastal Plain. They are moderately well drained. In the Terrell County survey only the fine sand and fine sandy loam types are mapped.

THOMPSON FINE SAND.

Where typical the Thompson fine sand consists of a gray to yellowish-gray fine sand, underlain at 6 to 8 inches by a pale-yellow loose fine sand, mottled with gray in the lower part. In some cases the soil is nearly white and in small depressions a fine sandy loam texture is found.

Only two areas are mapped, situated south of Wrights Bridge, along the Kinchafoonee River. Although the extent of the type is small, it is sufficiently distinct from the fine sandy loam of this series to warrant separation on the map.

The Thompson fine sand is alluvial in origin and is subject to frequent overflow. The surface is billowy or hummocky and interrupted by sloughs and swales. The type is lower than the Kalmia fine sand, which it physically resembles. The chief difference between the two types is that the Thompson fine sand is frequently overflowed, is more hummocky, and has a browner surface.

The type is covered with a growth of spruce pine, swamp palmetto, beech, swamp maple, "swamp" pine, magnolia, holly, ironwood, and other water-loving vegetation. Cypress is found in lower lying and wetter positions. Being subject to frequent overflow, the best use of this soil seems to be as forest and pasture land.

THOMPSON FINE SANDY LOAM.

The surface soil of the Thompson fine sandy loam consists of a gray to brownish-gray fine sand to loamy fine sand. The subsoil, encountered between 6 and 12 inches of the surface, consists of yellow fine sand, gradually becoming heavier with depth and passing into a very pale yellow sandy clay at a depth of 18 to 24 inches. The subsoil is often mottled with deep shades of yellow, drab, and gray. The surface is loose and incoherent, while the lower subsoil is usually friable, though in some places sticky and plastic.

The type is similar to the Kalmia fine sandy loam, differing from it in its occurrence on first bottoms, while the Kalmia is found on terraces. Drainage conditions are poor. It is overflowed during ordinary high-water stages of the various streams.

One area is cleared and used in the production of oats and corn. Yields per acre range from 15 to 20 bushels of the former and 20 to 30 bushels or more of the latter. Clearing the land would be quite expensive.

Only two areas of this soil are mapped. One area is found east of Shiloh Church and the other along Chickasawhachee Creek near the mouth of Herod Creek.

The soil is productive, but on account of the high cost of clearing and the danger of overflow the type will likely not be utilized as long as other productive soils are available.

Miscellaneous Material.

MUCK.

Muck consists of black decomposed vegetable matter containing varying but relatively small amounts of silt, clay, and sand. As typically developed there is little change in texture or color within the surface 3 feet. The immediate surface, however, usually consists of partially decomposed vegetable material, such as leaves and stems of plants. In some places, especially near the edges of the areas, a subsoil of mottled sandy clay or sandy loam is encountered at depths ranging from 12 to 36 inches. In most of the areas the Muck is permanently saturated with water.

All the Muck mapped in Terrell County is located in stream valleys. Its most extensive development is in the valley of Ichawaynochaway Creek. One area begins just below the mouth of Cheenubba Creek and extends southward for a distance of about 6 miles. Another area begins about 2 miles southwest of Doverel and continues to the south county line, with an average width of three-eighths of a mile. Another small area mapped as Muck occurs in the valley of Kinchafoonee River northwest of Halls Bridge. This last-named area, however, varies from true Muck in containing a much larger percentage of inorganic soil material and in being better drained.

Only a small proportion of the Muck area in this county has been cleared of trees, and at present none of it is cultivated. The native growth consists chiefly of magnolia, sweet bay, shortleaf pine, smilax, cane, huckleberry, and numerous other water-loving plants. Draining and clearing this soil would be very expensive and under present agricultural conditions scarcely profitable. It would be best adapted, if brought under cultivation, to the production of such crops as celery, lettuce, cabbage, and onions.

SWAMP.

Swamp comprises stream bottoms which are subject to frequent overflow and are more or less wet and swampy throughout the year.

The soil is almost entirely of alluvial origin and is extremely variable in texture and color. Much of the material is a fine sandy loam, dark gray or brown on the surface, grading into a drab or mottled drab, yellow, and red fine sandy clay in the subsoil. The gradations in texture range from clay to sand, and no extensive areas of any one

type could be mapped. In some of the areas, especially in the valley of Ichawaynochaway Creek, Muck is included in small quantities. Near the heads of many of the small streams there is a gradation upstream from Swamp into Grady clay loam or Grady sandy loam, in which cases the soil boundaries are purely arbitrary.

Swamp was mapped in the valleys of all the larger streams of the county. With the exception of the Muck areas and the areas of the Thompson soils, all the true first-bottom material was included with this Swamp.

This type is all timbered. The most important trees are shortleaf and spruce pine, tulip, sweet gum, swamp maple, sweet bay, magnolia, ironwood, holly, and cypress. The expense of draining and clearing these Swamp areas would be considerable, and at present in most cases the value of the land thus opened to cultivation would probably not be sufficient to warrant the necessary expenditure. It must be considered, however, that the drainage of these areas would greatly improve the health conditions of the surrounding country.

SUMMARY.

Terrell County lies in the southwestern part of the State of Georgia. It is approximately 62 miles north of the Florida line and 32 miles east of Alabama. Its area is 334 square miles, or 213,760 acres.

The topography ranges from level to rolling, and the county is well drained. Nearly all of the county can be classed as arable land.

The population according to the 1910 census was 22,003, more than two-thirds negro. Dawson is the county seat, with a population of 3,827.

Railroad transportation is afforded by the Central of Georgia and Seaboard Air Line Railways. The public roads are numerous and well maintained.

The mean temperature is 65.1° F., with an extreme range from 10° to 104° F. Hardy vegetables can be grown with some care during the winter. The mean precipitation is 52.17 inches, and even in the driest year there was 35.57 inches.

Agriculture is the chief resource of the county and cotton the main crop, occupying about 42 per cent of the improved land. Corn is the second crop in importance, followed by oats and cowpeas.

Commercial peach orchards have an average of 270 acres. The fruit is shipped most generally to western markets.

The production of beef and pork is insufficient to supply local needs. Better breeds of cattle and hogs are being introduced.

Thirty-five types of soil, including Muck and Swamp, were mapped in the county. The larger percentage of these soils are derived from

unconsolidated marine deposits, though they may be influenced to some extent by an admixture of material from underlying limestone.

The Greenville series is characterized by red surface soils and red subsoils. Seven types in this series are found.

The Greenville loamy sand is found in the western part of the county, and is used for general farm crops. The yields are light. The Greenville sandy loam is a productive soil used chiefly for the staples—cotton and corn. The Greenville gravelly clay loam, stony clay loam, and clay loam comprise the areas locally called "hard red lands." They are utilized in general farming, and are well suited for this purpose. The Greenville gravelly sandy loam is a productive cotton soil. The Greenville loam is a dark chocolate colored soil, more productive for corn and oats than cotton.

The Orangeburg series is characterized by the gray or brownish-gray surface soils and red subsoils. The Orangeburg sand is a light, loose soil, better adapted to early trucking than general farming. Crop yields are low. The Orangeburg sandy loam and gravelly sandy loam are good soils both for general farming and for trucking.

The Tifton sandy loam type comprises the "gray gravelly lands" of the county and is highly prized. Good yields of all crops are obtained and the crop range is wide.

The Norfolk soils comprise the "gray lands" that do not carry the large quantities of gravel characteristic of the Tifton.

The Norfolk sand is a light, loose, incoherent soil. It is used in general farming, though not very well suited for this purpose. Crops suffer from drought and the yields are low. The soil is better suited for growing early truck crops.

The Norfolk sandy loam and the deep phase of this type are much more productive than the sands. They can be successfully used in the production of a wide range of crops.

The Ruston soils are intermediate between the Norfolk and Orangeburg in point of color.

The Ruston sand is a loose, incoherent soil, on which crops are damaged during continued dry weather. The Ruston sandy loam is a productive soil, but somewhat damaged by erosion. In productiveness it stands next to the Greenville sandy loam. The clay loam type is a difficult soil to plow and cultivate, and only moderate yields are obtained on it.

The Sumter soils are residual from limestone. The sandy loam is uncleared. The stony sandy loam is characterized by the large amount of chert, flint, and chalcedony on the surface. Both are productive soils but difficult to till. The Sumter clay, found in small, poorly drained areas, is still covered with native vegetation.

The Grady sandy loam and clay loam types are poorly drained soils, occupying lime-sink depressions and bottomlike areas along stream courses. Very little of these soils is cleared and drained. They can be utilized for the production of oats, corn, and forage crops.

The Hoffman clay loam, a locally developed soil, is called "chalky land." Its agricultural value is low.

The Amite loamy sand and clay loam are soils found on the stream terraces. Good yields of ordinary farm crops are obtained on these types.

The Kalmia fine sand and fine sandy loam are stream-terrace soils well adapted to the production of corn, oats, and forage crops, but at present unused. The Kalmia sand is a loose, incoherent soil found along the terraces of certain creeks and the Kinchafoonee River. A part of it is farmed, producing fair yields.

The Myatt sand and silty clay loam are poorly drained and forested terrace soils. It would be expensive to put these lands into an arable condition.

The Leaf fine sandy loam is doubtless a good soil, though not at present farmed. At an earlier period in the county's development it was cultivated, corn being a very satisfactory crop.

The Cahaba loamy sand is fairly productive for general farm crops. It will be found an even better soil for early truck crops.

The Thompson fine sand and fine sandy loam types occur chiefly as overflow bottoms along the Kinchafoonee River. They are covered with a heavy forest growth.

Muck, found chiefly along the Ichawaynochaway Creek, is yet unreclaimed. Reclamation would be expensive, but the land would be valuable for the production of special crops.

Swamp comprises the low, wet bottoms along stream courses which are frequently overflowed. It is covered by a dense growth of water-loving trees and shrubs, and in the present condition is nonagricultural.

○

[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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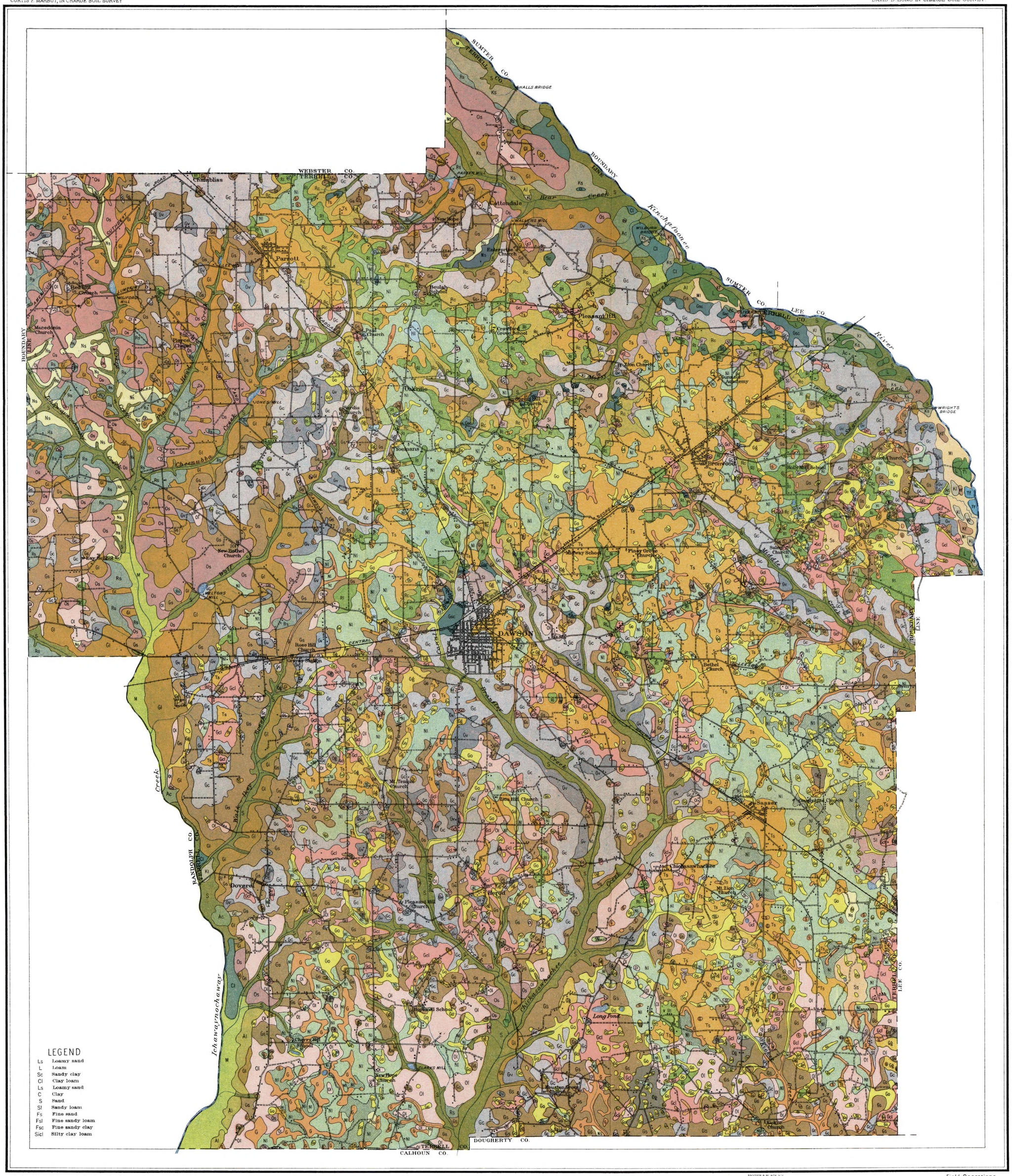
SOIL MAP
GEORGIA
TERRELL COUNTY SHEET

U. S. DEPT OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

GEORGIA STATE COLLEGE OF AGRICULTURE
ANDREW M. SOULE, PRESIDENT
DAVID D. LONG IN CHARGE SOIL SURVEY

SOIL PROFILE
(3 feet deep)

- Greenville loamy sand — Ls / Ls
- Grady sandy loam — Sl / C
- Greenville loam — L / Sc
- Grady clay loam — Cl / C
- Greenville gravelly sandy loam — Ls / C
- Sumter stony sandy loam — Ls / Sc / C
- Greenville stony clay loam — Cl / Sc
- Sumter sandy loam — Sl / Sc to C
- Greenville gravelly clay loam — Cl / Sc
- Sumter clay — Sl to Cl / C
- Greenville sandy loam — Ls / Sc
- Kalmia sand — S / S
- Greenville clay loam — Cl / Sc
- Kalmia fine sand — Fs / Fs
- Orangeburg sand — S / S
- Kalmia fine sandy loam — Fs / Fsl / Fsc
- Orangeburg gravelly sandy loam — S / Sl / Sc
- Amite loamy sand — Ls / Ls
- Orangeburg sandy loam — S / Sl / Sc
- Amite clay loam — Cl / Sc
- Ruston sand — S / S
- Thompson fine sand — Fs / Fs
- Ruston sandy loam — S to Ls / Sc
- Thompson fine sandy loam — Fs / Fsl / Fsc
- Ruston clay loam — Cl / Sc
- Myatt sand — Ls / C
- Norfolk sand — S / S
- Myatt silty clay loam — Sicl / C
- Norfolk sandy loam — S / Sl / Sc
- Hoffman clay loam — Ls / Sc
- Deep phase — S / Sl to Sc
- Cahaba loamy sand — Ls / Ls
- Tifton sandy loam — Ls / Sl / Sc
- Leaf fine sandy loam — Fsl / Fsl / C



LEGEND

Ls	Loamy sand
L	Loam
Sc	Sandy clay
Cl	Clay loam
Ls	Loamy sand
C	Clay
S	Sand
Sl	Sandy loam
Fs	Fine sand
Fsl	Fine sandy loam
Fsc	Fine sandy clay
Sicl	Silty clay loam

LEGEND

- Greenville loamy sand — Gl
- Grady sandy loam — G
- Greenville loam — Gv
- Grady clay loam — Go
- Greenville gravelly sandy loam — Gg
- Sumter stony sandy loam — Sl
- Greenville stony clay loam — Gsc
- Sumter sandy loam — Ss
- Greenville gravelly clay loam — Gcl
- Sumter clay — Sc
- Greenville sandy loam — Gs
- Kalmia sand — Ks
- Greenville clay loam — Gc
- Kalmia fine sand — Kf
- Orangeburg sand — Os
- Kalmia fine sandy loam — Kl
- Orangeburg gravelly sandy loam — Og
- Amite loamy sand — Al
- Orangeburg sandy loam — Ol
- Amite clay loam — Ac
- Ruston sand — Rs
- Thompson fine sand — Tf
- Ruston sandy loam — Rl
- Thompson fine sandy loam — Tl
- Ruston clay loam — Rc
- Myatt sand — Ms
- Norfolk sand — Ns
- Myatt silty clay loam — Ml
- Norfolk sandy loam — Nl
- Hoffman clay loam — Hl
- Deep phase — Nl
- Cahaba loamy sand — Cl
- Tifton sandy loam — Ts
- Leaf fine sandy loam — L
- Muck — M
- Swamp — S

CONVENTIONAL SIGNS

CULTURE
(*printed in black*)

- City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort.
- Secondary roads and Trails
- Railroads Steam and Electric
- Bridges, Ferry
- R. R. crossings, Tunnel
- Ford, Dam
- School or Church Cemeteries
- Mine or Quarry Mine dumps Made land
- Bluff, Escarpment, Rock outcrop and Triangulation station
- Stony and Gravelly areas
- Soil boundaries Oil wells and tanks
- Boundary lines
- Boundary lines
- Boundary lines.
- U. S. township and section lines

RELIEF
(*printed in brown or black*)

- Contours Depression contours
- Prominent Hills Mountain Peaks
- Sand, Wash, and Sand dunes
- Shore and Low-water line, Sandbar

DRAINAGE
(*printed in blue*)

- Streams
- Lakes, Ponds, Intermittent lakes
- Intermittent streams
- Springs, Canals and Ditches, Flumes
- Fresh marsh Salt marshes
- Submerged marsh Tidal flats

The above signs are in current use on the soil maps. Variations from this usage appear in some maps of earlier dates.

Hugh H. Bennett, Inspector Southern Division
Soils surveyed by David D. Long of the Georgia State College of Agriculture and Mark Baldwin of the U.S. Department of Agriculture

Scale 1 inch = 1 mile
1 ½ 0 1 2 3 4 Miles

SNYDER & BLACK, N.Y.

Field Operations
Bureau of Soils
1914